Repair

LineLazer IV 250SPS
Self-Propelled Line Striper

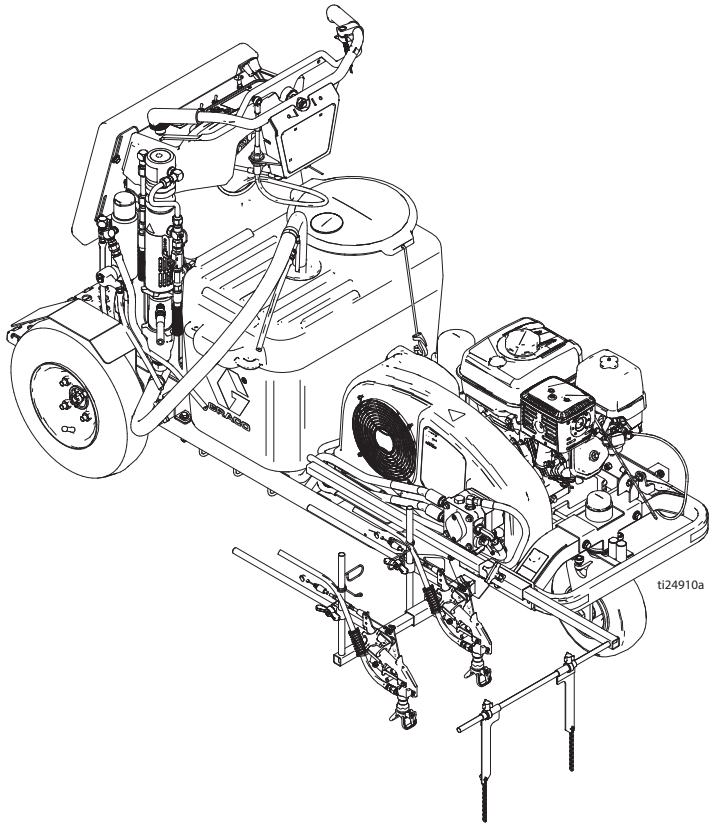
3A2593B
EN

For the application of line striping materials.
For professional use only.
For outdoor use only.
Not for use in hazardous locations or explosive atmospheres.

Maximum Operating Speed: 10 mph (16 kph)
Maximum Operating Pressure: 3300 psi (22.8 MPa, 228 bar)

IMPORTANT SAFETY INSTRUCTIONS
Read all warnings and instructions in this manual and the engine manual. Save these instructions.

Related Manuals:	
3A2090	Operation
3A2598	Parts
311254	Gun
309277	Pump
312307	Auto-Layout Applications Methods



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Models

Model	Guns	Pressurized Bead System	Description
24F307	2	No	LLIV 250SPS (North America, Latin America, Asia Pacific)
24K960	1	No	LLIV 250SPS (Latin America, Asia Pacific)
24K961	1	No	LLIV 250SPS (Europe)
24K962	2	No	LLIV 250SPS (Europe)
24M608	1	No	FieldLazer G400 (North America)
16V470	1	Yes, 1 Tank	LLIV 250 SPS (Latin America, Asia Pacific)
16V471	1	Yes, 1 Tank	LLIV 250 SPS (Europe)
16V473	2	Yes, 1 Tank	LLIV 250 SPS (North America, Latin America, Asia Pacific)
16V474	2	Yes, 1 Tank	LLIV 250 SPS (Europe)
24U561	2	Yes, 2 Tanks	LLIV 250 SPS (North America, Latin America, Asia Pacific)

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

⚠ WARNING

TRAFFIC HAZARD

Being struck by other vehicles may result in serious injury or death.

- Do not operate in traffic.
- Use appropriate traffic control in all traffic areas.
- Follow local highway and transportation regulations for traffic control (for example: Manual on Uniform Traffic Control Devices, U.S. Department of Transportation).

FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Do not fill fuel tank while engine is running or hot; shut off engine and let it cool. Fuel is flammable and can ignite or explode if spilled on hot surface.
- Keep work area free of debris, including solvent, rags and gasoline.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock**.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

INJECTION HAZARD

High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not spray without tip guard and trigger guard installed.
- Engage trigger lock when not spraying.
- Do not point gun at anyone or at any part of the body.
- Do not put your hand over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop spraying and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.

CARBON MONOXIDE HAZARD

Exhaust contains poisonous carbon monoxide, which is colorless and odorless. Breathing carbon monoxide can cause death.

- Do not operate in an enclosed area.

⚠ WARNING

PRESSURIZED ALUMINUM PARTS HAZARD

Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.

- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.

ENTANGLEMENT HAZARD

Rotating parts can cause serious injury.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Do not wear loose clothing, jewelry or long hair while operating equipment.
- Equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.
- Do not carry passengers.
- Check work area for reduced overhead clearance (e.g. doorways, tree branches, parking ramp ceilings) and avoid contacting them.

WARNING

BATTERY SAFETY

The battery may leak, explode, cause burns, or cause an explosion if mishandled.

- Only use the battery type specified for use with the equipment. See **Technical Data**.
- Battery maintenance must only be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from battery.
- Do not dispose of battery in fire. The battery is capable of exploding.
- Follow local ordinances and/or regulations for disposal.
- Do not open or mutilate the battery. Released electrolyte has been known to be harmful to the skin and eyes and to be toxic.
- Remove watches, rings, or other metal objects.
- Only use tools with insulated handles. Do not lay tools or metal parts on top of battery.

BURN HAZARD

Equipment surfaces and fluid that’s heated can become very hot during operation. To avoid severe burns:

- Do not touch hot fluid or equipment.

PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to:

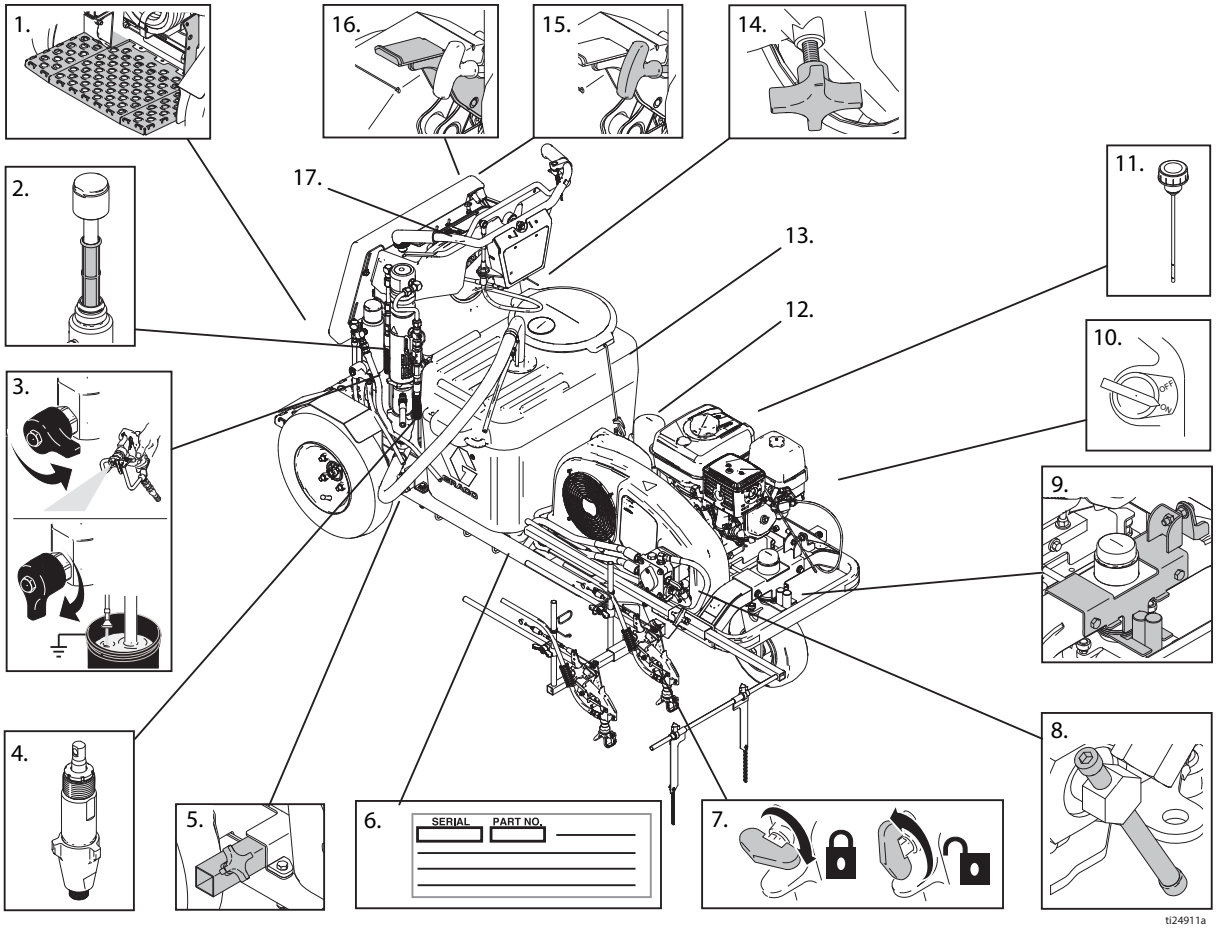
- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

CALIFORNIA PROPOSITION 65

The engine exhaust from this product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.

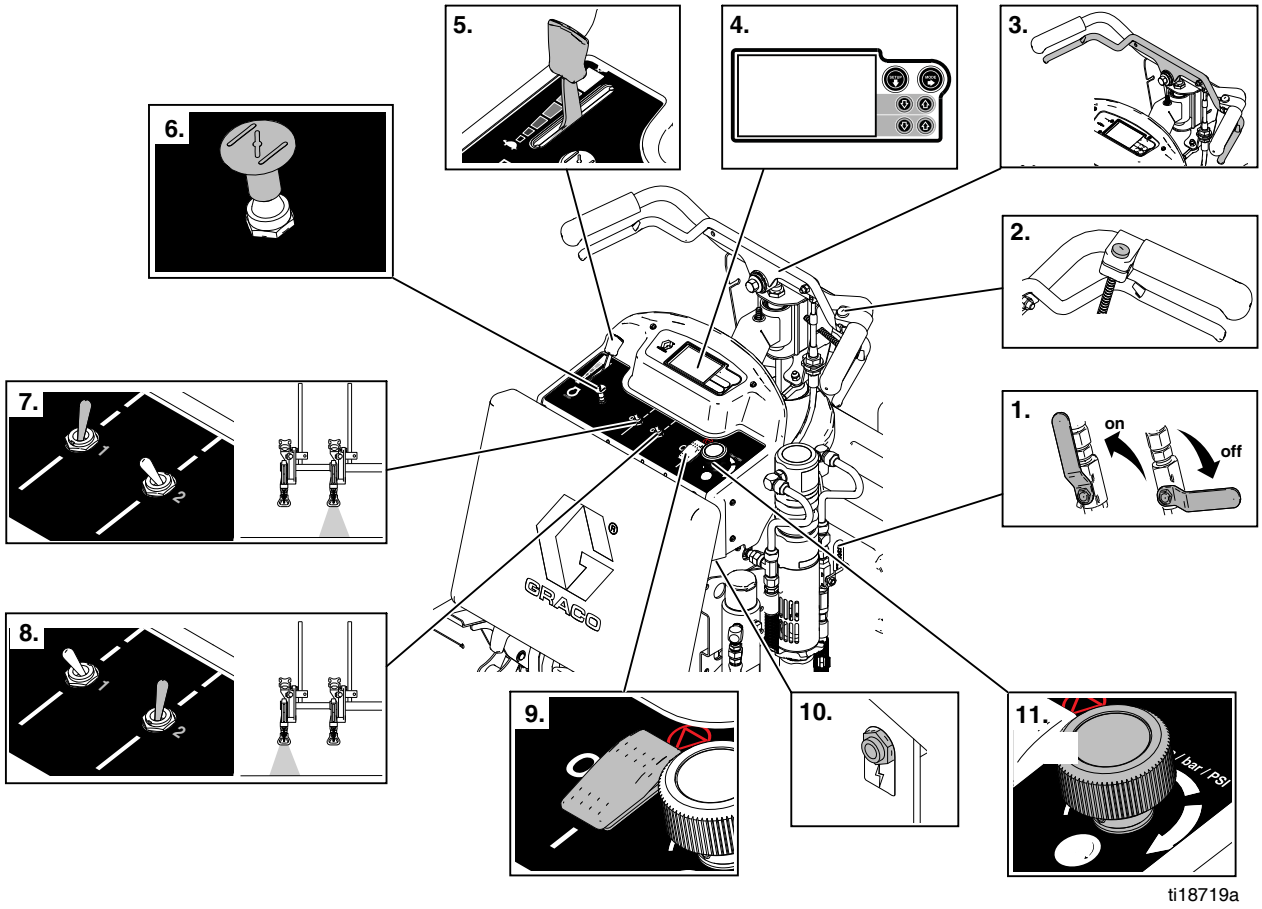
Component Identification



1	Operator Platform
2	Paint Filter
3	Prime / Drain Valve
4	Displacement Pump
5	Rear Gun Arm Mount
6	Serial Label
7	Gun Trigger Safety
8	Wheel Motor Bypass Valve
9	Straight Line Adjuster

10	Engine ON/OFF Switch
11	Hydraulic Fill Cap / Dipstick
12	Hydraulic Oil Filter
13	Paint Hopper (25 gallon / 95 liter)
14	Handle Bar Height Adjustment Knob
15	Engine Recoil Handle
16	Brake
17	Steering Handle

Component Identification (Controls)

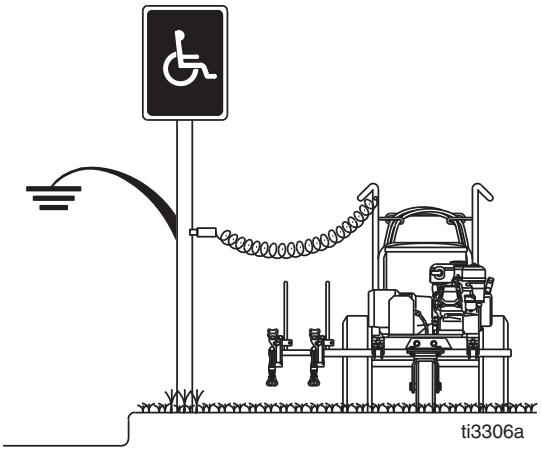


1	Hydraulic Pump Valve
2	Gun Trigger Control
3	Forward / Reverse Lever
4	Display
5	Engine Throttle
6	Engine Choke
7	Gun 1 Selector
8	Gun 2 Selector
9	Engine Kill / Main Power Switch
10	12V Accessory Jack
11	Pressure Control

Grounding Procedure
(For Flammable Materials Only)

This equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

1. Position striper so that the tires are not on pavement.
2. Ground sprayer with grounding clamp. Grounding clamp must attach to grounded object (e.g. metal sign post).

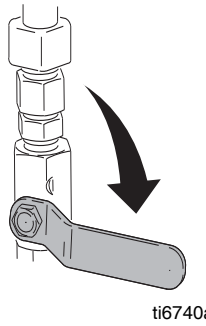


Pressure Relief Procedure

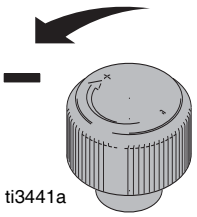
Follow the Pressure Relief Procedure whenever you see this symbol.

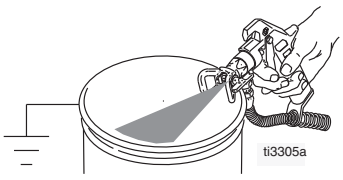
This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Perform **Grounding Procedure** if using flammable materials.
2. Set pump valve **OFF**. Turn engine **OFF**.

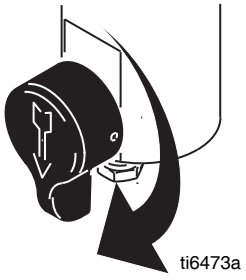


3. Turn pressure control to lowest setting. Trigger gun to relieve pressure.





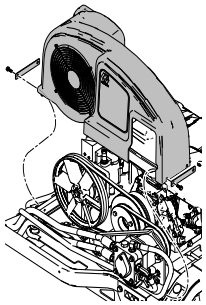
4. Engage gun trigger safety. Turn prime valve down.



Ground Drive Belt Replacement

Removal

1. Loosen four screws and remove belt cover.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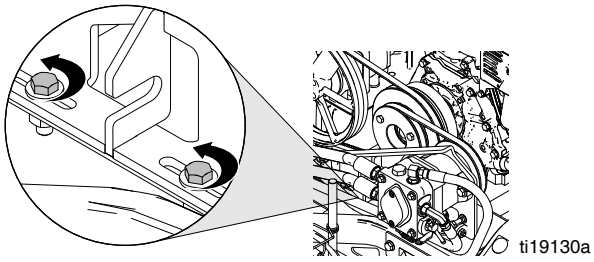
2. Loosen two hold-down bolts.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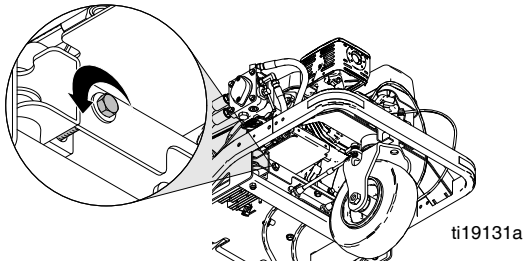
3. Loosen tension bolt to bring two pulleys closer together to create slack in the belt.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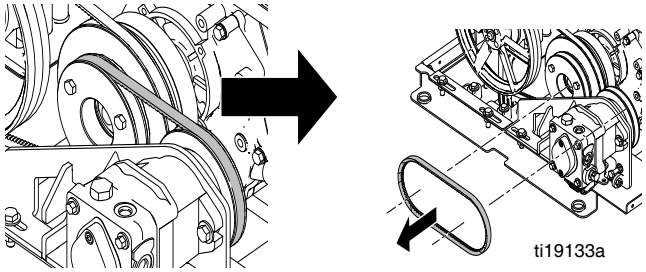
4. Remove belt.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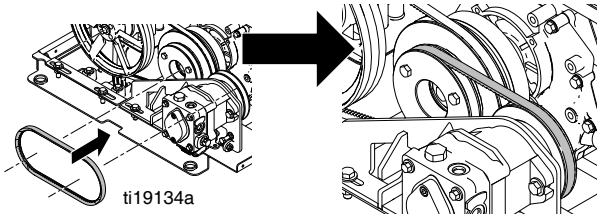
Installation

1. Install belt onto pulleys.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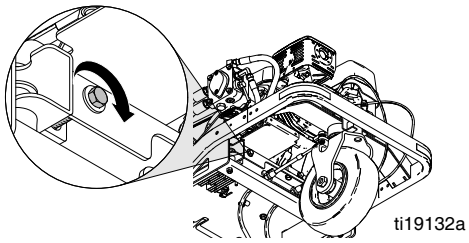
2. Tighten tensioning bolt to move two pulleys apart and tighten belt to proper tension (see table).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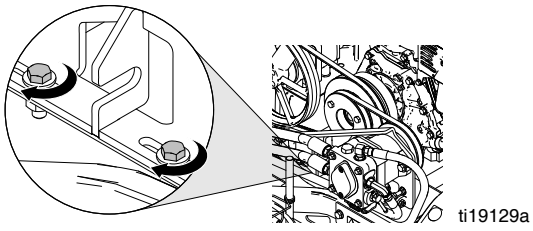
Ground Drive Belt Tension Recommendations		
New Belt	Tension	53 +/- 2 Lbf (236 +/- 9 N)
	Frequency	167 +/- 3 Hz
Used Belt	Tension	45 +/- 2 Lbf (200 +/- 9 N)
	Frequency	155 +/- 3 Hz

Gates Sonic Tension Meter
Settings: M = MASS = 85 g/m
W = # of belts = 1
S = Span = 157 mm

3. Install mounting plate and tighten two hold-down bolts.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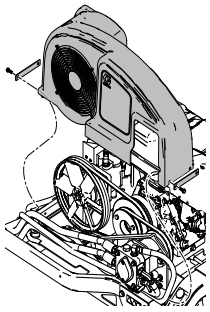
4. Replace belt cover and tighten four screws.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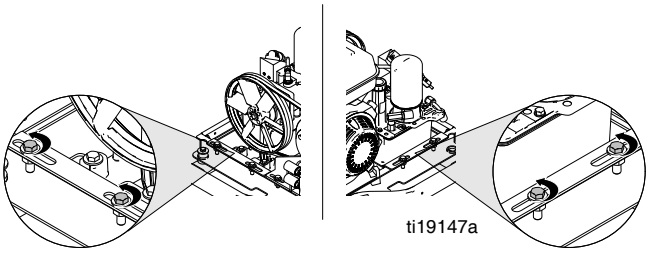
Oil Reservoir Belt Replacement

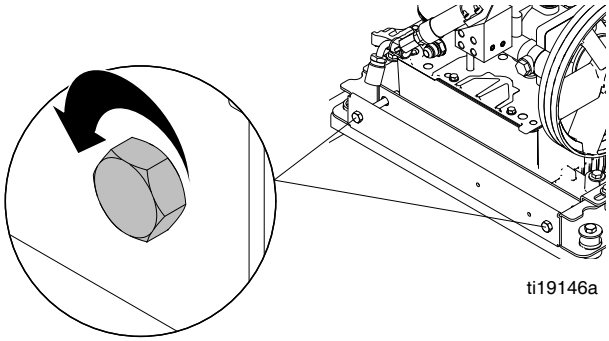
Removal

NOTE: Ground drive belt must be removed before oil reservoir belt can be replaced (see page 10).

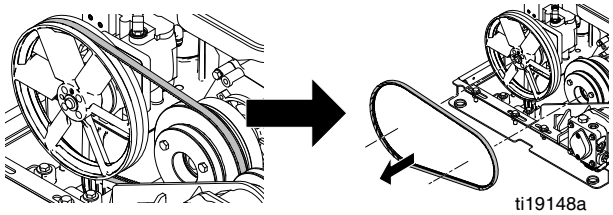
1. Loosen four hold-down bolts.



2. Loosen two adjustment bolts to bring pulleys closer together to create slack in the belt.

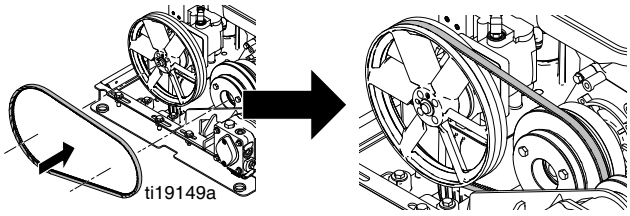


3. Remove belt.

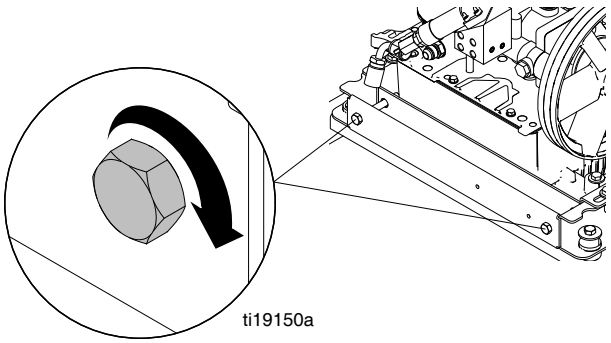


Installation

1. Replace belt.



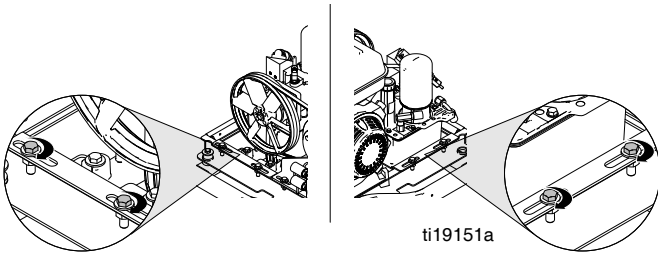
2. Tighten two adjustment bolts evenly and maintain belt alignment. Tighten belt to proper tension (see table).



Oil Reservoir Belt Tension Recommendations		
New Belt	Tension	55 +/- 2 Lbf (245 +/- 9 N)
	Frequency	114 +/- 2 Hz
Used Belt	Tension	48 +/- 2 Lbf (214 +/- 9 N)
	Frequency	106 +/- 2 Hz

Gates Sonic Tension Meter
Settings: M = MASS = 85 g/m
W = # of belts = 1
S = Span = 236 mm

3. Tighten four hold-down bolts.



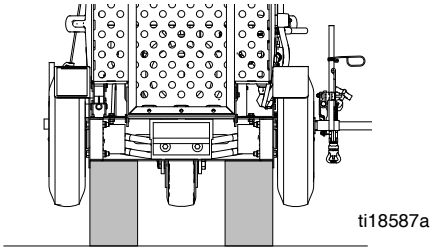
4. Install **Ground Drive Belt** and tighten to proper tension (see page 10).

Hydraulic System Purging

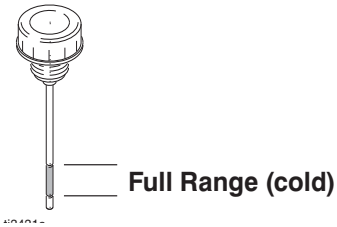
This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

Follow this procedure after replacing any hydraulic component other than the hydraulic gun manifold which is self-purging.

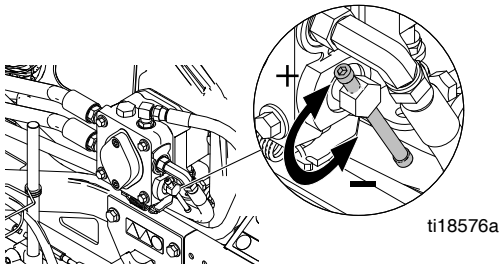
1. Set LineStriper on blocks so wheels are off ground.



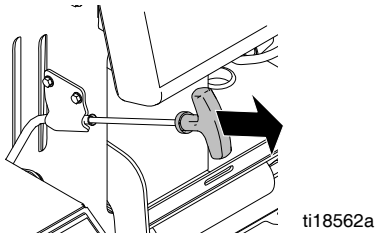
2. Fill oil reservoir to “Full” range.



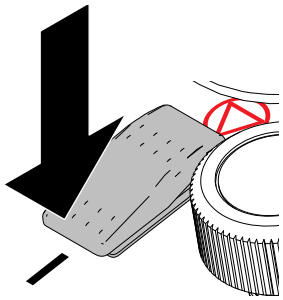
3. Make sure drive wheel release is closed (+).



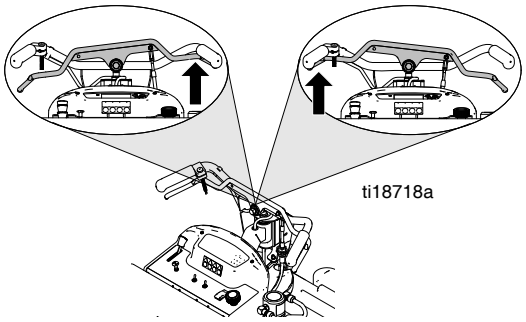
4. Start engine and run at low speed.



5. Turn on the Main Power Switch to engage clutch.

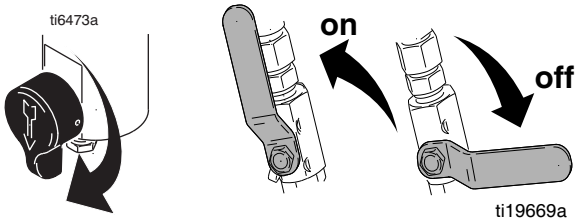


6. Slowly pull forward/reverse control lever in forward and reverse directions 10 times.



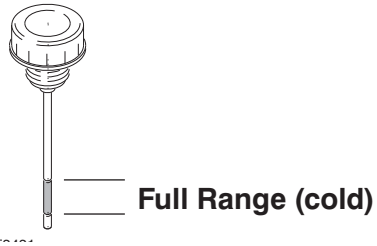
NOTE: Both rear wheels should turn in the correct direction. If one wheel is not turning, carefully restrain the spinning wheel to purge out the wheel that is not turning.

7. Turn the prime valve down and open the hydraulic pump valve. Allow the paint pump to stroke 10 times and then close the hydraulic pump valve.

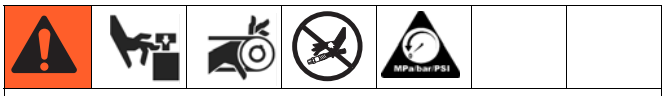


8. The hydraulic gun manifold is self-purging.

9. Turn engine off and check oil level. Top off to “Full” range.



Ground Drive Pump Replacement



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

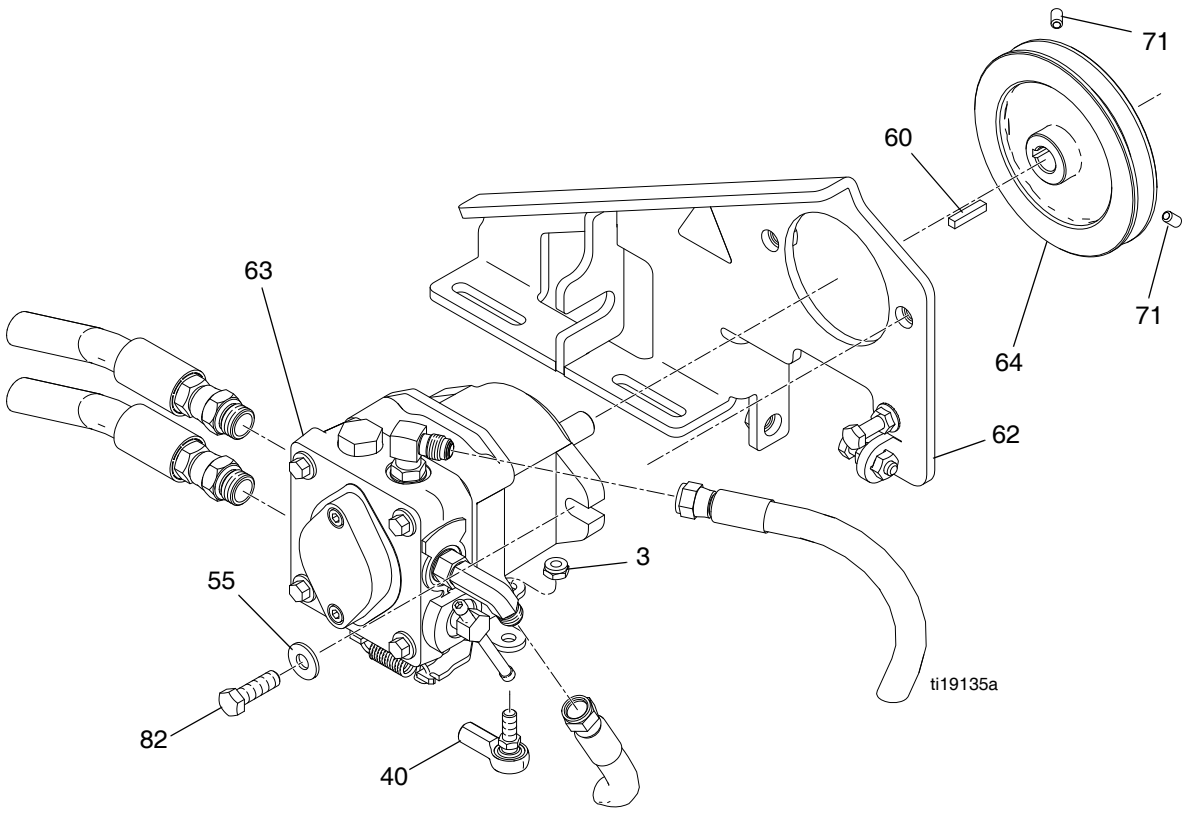
Removal

1. Remove **Ground Drive Belt,** page 10.
2. Use allen wrench to remove two set screws (71) from pulley (64).
3. Slide pulley (64) off shaft and save key (60).
4. Disconnect all fittings and hoses from pump (63).

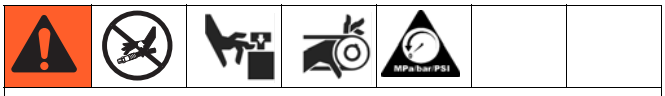
   NOTE: Oil will spill out of hoses. Have rags and waste pail nearby.
5. Remove nut (3) and disconnect tie rod (40) underneath pump (63).
6. Remove two mounting bolts (82) and washers (55) to remove pump (63) from bracket.

Installation

1. Insert pump (63) into bracket (62) and install two mounting bolts (82) and washers (55).
2. Install tie rod (40) with nut (3) to lever underneath pump (63).
3. Connect all fittings and hoses to pump (63).
4. Install key (60) onto pump shaft and slide pulley (64) onto shaft.
5. Align pulley to outer clutch groove and tighten two set screws (71).
6. Install **Ground Drive Belt** and tighten to proper tension (see page 10).
7. **Purge Hydraulic System**, page 12.



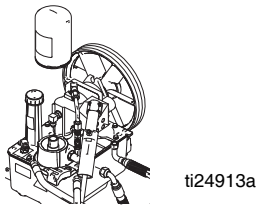
Oil Reservoir Pump Replacement



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

Removal

1. Remove belt cover and **Oil Reservoir Belt,** page 11.
2. Remove oil filter and disconnect three hydraulic hoses from oil reservoir.



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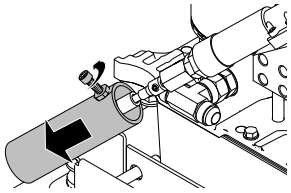
3. Loosen nut and slide cable sleeve down to gain access to cable set screw.



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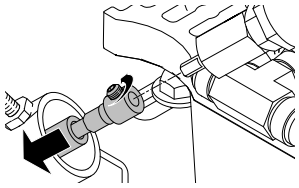
4. Remove set screw and cable.



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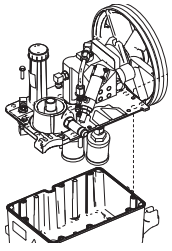
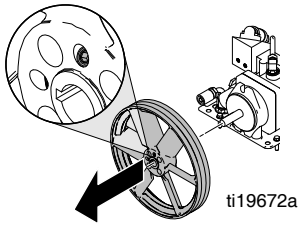
5. Remove eight screws and oil reservoir cover with pump.



ti24914a

6. Remove pulley from pump. Remove four screws and pump from reservoir cover.



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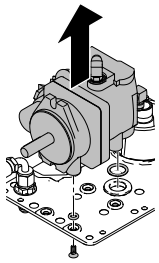
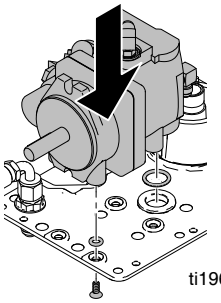


Installation

1. Install pump onto oil reservoir cover with four screws.



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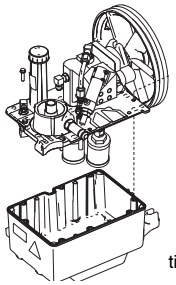
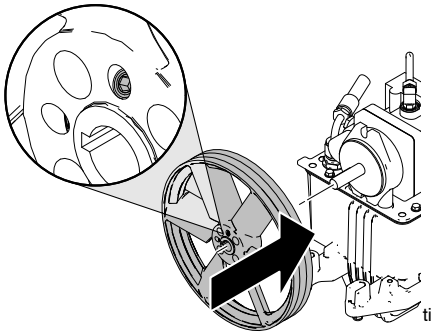
2. If hydraulic oil is contaminated in reservoir, drain reservoir and remove contamination. Install oil reservoir cover with eight screws to the oil reservoir base.



ti24914a

3. Install pulley on pump shaft and maintain belt alignment to inner groove of the clutch pulley. Tighten two pulley screws.



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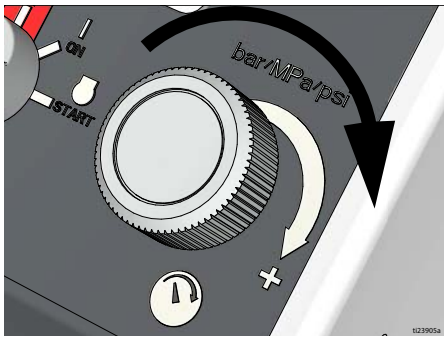
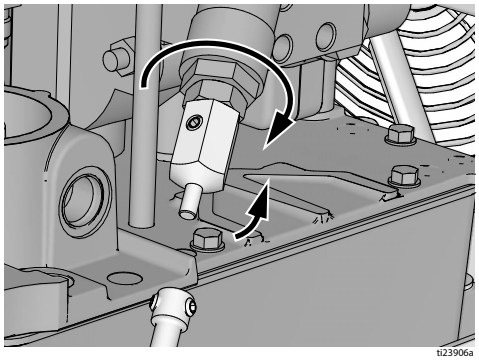
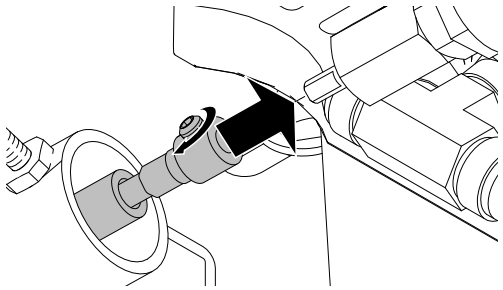
4. Turn pressure control knob clockwise until seated.



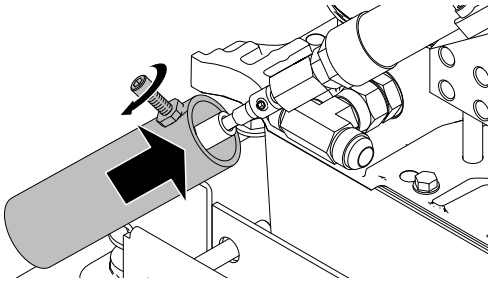
5. Turn hydraulic pump pressure control clockwise until seated then counterclockwise 1/6 turn.



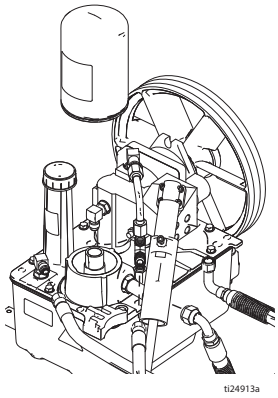
6. Install cable and tighten set screws.



7. Slide cable sleeve up and tighten screw.



8. Connect three hydraulic hoses to fittings on oil reservoir. Replace oil filter.



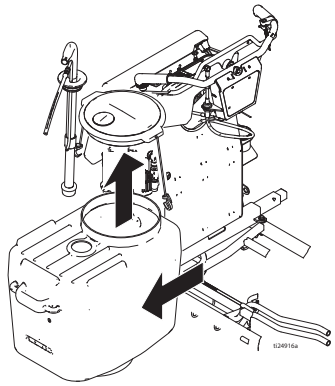
9. Install and tension **Oil Reservoir Belt** (page 11) and **Ground Drive Belt** (page 10).

10. Purge hydraulic system, page 12.

Hydraulic Gun Manifold Replacement

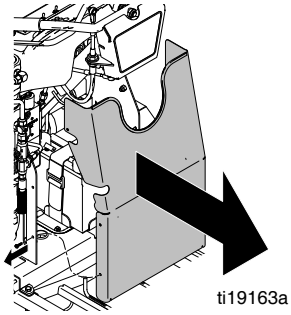
Removal

1. Remove tank lid and siphon tube.



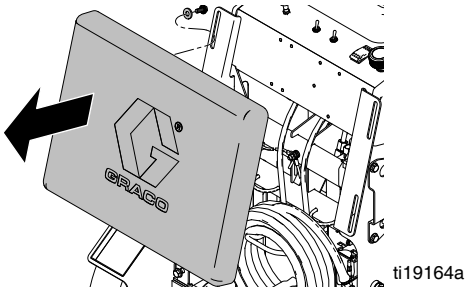
2. Remove tank from unit.

3. Remove six screws from front shield.

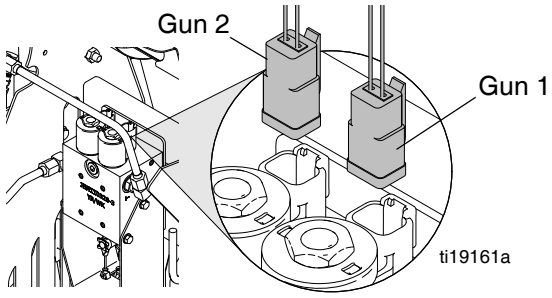


4. Remove front shield from unit.

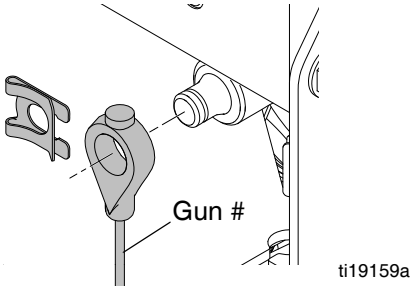
5. Loosen four screws and remove pad.



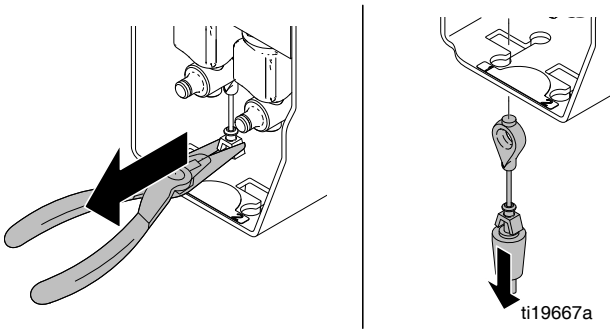
6. Label wire harnesses **GUN 1** and **GUN 2**. Disconnect two wire harnesses from solenoids.



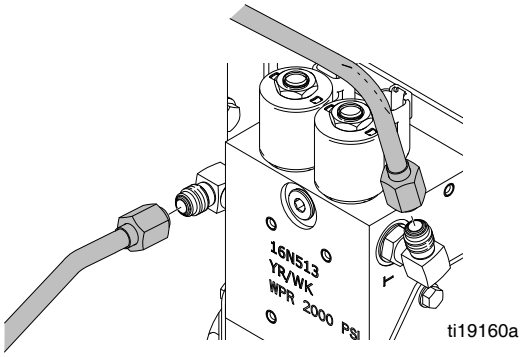
7. Label gun cables Gun 1 and Gun 2. Disconnect gun cables from actuators.



8. Use a needle-nose pliers to remove gun cables from bracket.

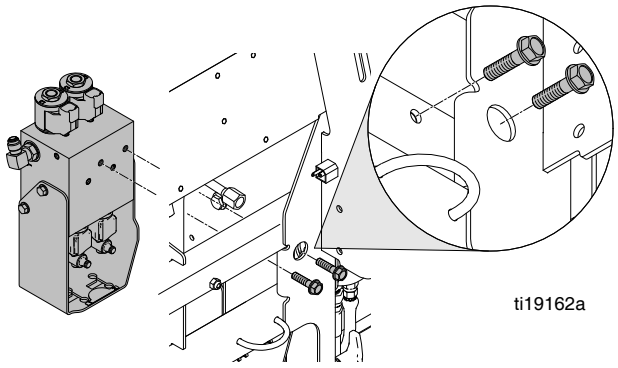


9. Use wrench to disconnect manifold tubes by the paint pump. **NOTE:** Oil will spill. Use a rag to contain the oil.



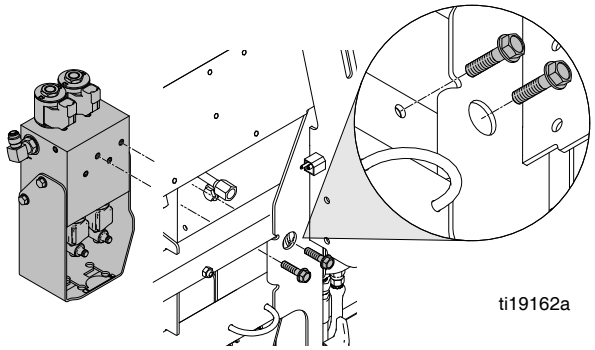
10. Disconnect manifold tubes at manifold.

11. Remove two mounting bolts and slide hydraulic manifold down and out from unit.



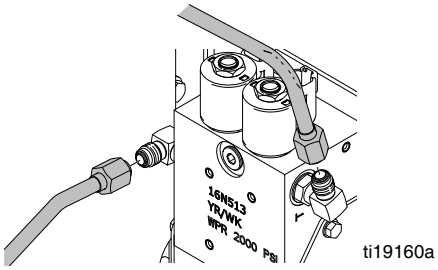
Installation

1. Slide hydraulic manifold in and up into unit. Install and tighten two mounting bolts.



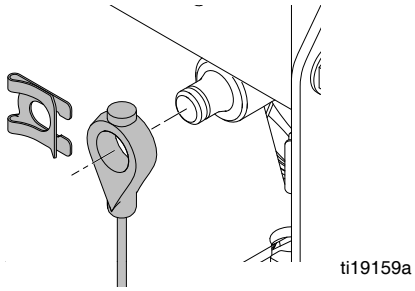
2. Loosely install manifold tubes to manifold.

3. Loosely install manifold tubes by the paint pump. Tighten four nuts.

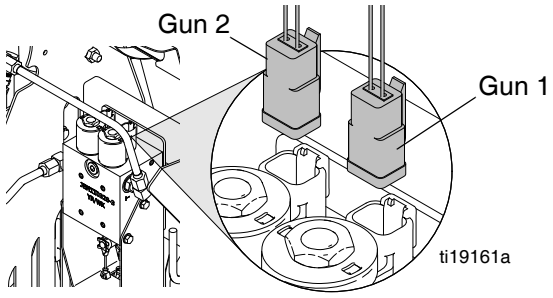


4. Push Gun 1 and Gun 2 gun cables into bracket. **NOTE:** Be sure to connect Gun 1 cable to the hole in the bracket closest to center of sprayer.

5. Connect Gun 1 and Gun 2 cables to actuators.



6. Connect two wire harnesses to solenoids. **NOTE:** Be sure to connect Gun 1 to coil closest to center of sprayer.



7. Install pad and tighten four screws.

8. Install front shield to unit and tighten six screws.

9. Install tank into unit and connect siphon tube.

NOTE: The hydraulic gun manifold is self-purging.

Paint Pump Replacement

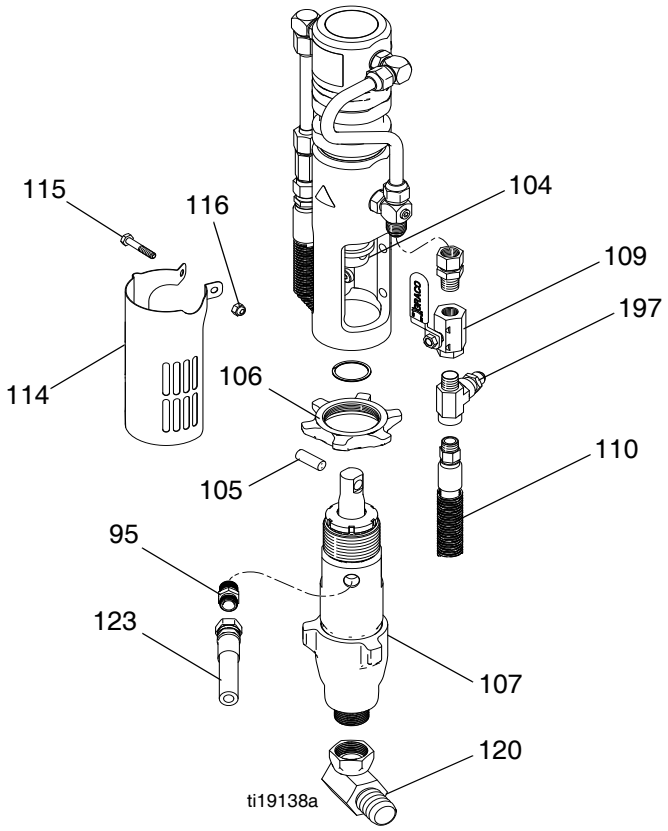
This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

Removal

1. Perform **Pressure Relief Procedure**, page 9.
2. Disconnect suction tube (120).
3. Disconnect hose (123) and fitting (95) from paint pump (107).
4. Remove screw (115), nut (116) and pump guard (114).
5. Use hammer to loosen pump jam nut (106).
6. Slide down retainer (104) and remove pin (105).
7. Unscrew and remove paint pump (107).

Installation

1. Extend pump rod out of pump (107).
2. Insert pump rod into hydraulic motor rod and install pin (105) and retainer (104).
3. Thread pump (107) into hydraulic motor housing until pump bottoms out. Unscrew pump one full turn and orient pump outlet (approximately 45°) to clear ball valve hose.
4. Use hammer to tighten pump jam nut (106).
5. Install guard (114) with screw (115) and nut (116).
6. Install fitting (95) and connect hose (123).
7. Connect suction tube (120).



Hydraulic Motor Replacement

This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

Removal

1. Perform **Pressure Relief Procedure**, page 9.
2. Remove **Paint Pump**, page 18.
3. Disconnect fitting (108) above ball valve (109).

   NOTE: Oil will spill out of hoses. Have rags and waste pail nearby.
4. Disconnect hose (111) and fitting (193) from fitting (196).
5. Disconnect pump counter (112) with 2 screws (113).

NOTICE

Use a screwdriver to lift pump piston up to gain access to mounting bolts and avoid contact with piston. Contact with pump mounting bolts can scratch and damage the pump piston.

6. Remove four mounting bolts (116) from hydraulic motor and remove motor from sprayer.

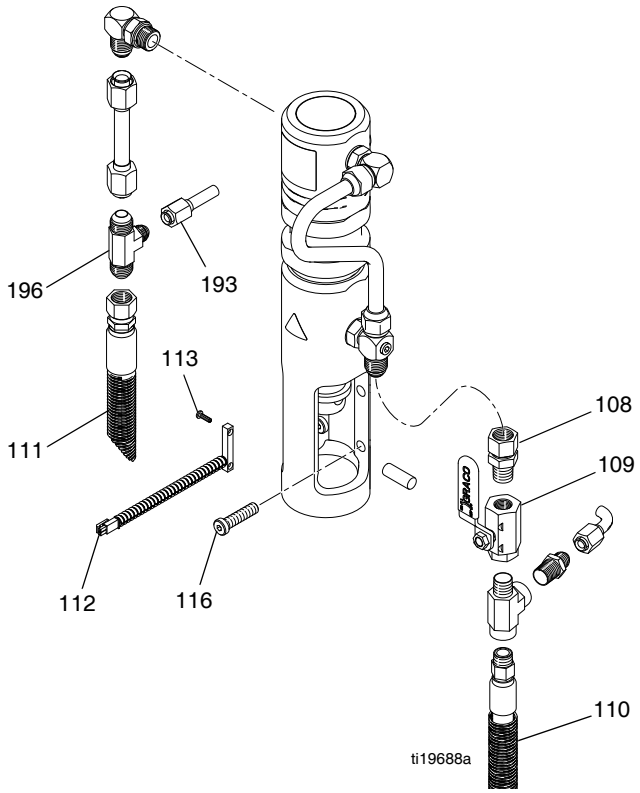
Installation

1. Install hydraulic motor with four mounting bolts (116).

NOTICE

Use a screwdriver to lift pump piston up to gain access to mounting bolts and avoid contact with piston. Contact with pump mounting bolts can scratch and damage the pump piston.

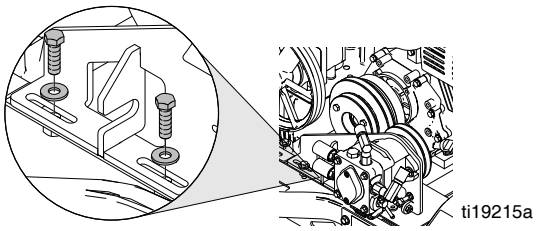
2. Install pump counter (112) with two screws (113).
3. Connect hose (111) and fitting (193) to fitting (196).
4. Connect fitting (108) above ball valve (109).
5. Install **Paint Pump**, page 18.
6. Purge hydraulic system, page 12.



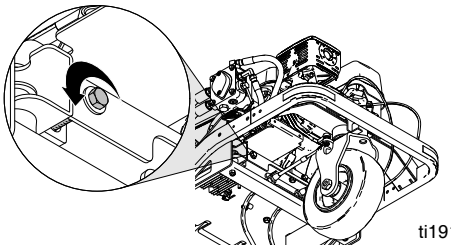
Clutch Replacement

Removal

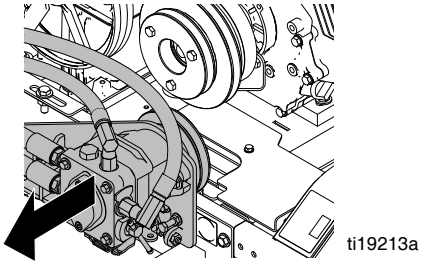
1. Remove **Ground Drive Belt,** page 10.
2. Remove **Oil Reservoir Belt**, page 11.
3. Remove two hold-down bolts for the ground drive pump bracket.


ti19215a

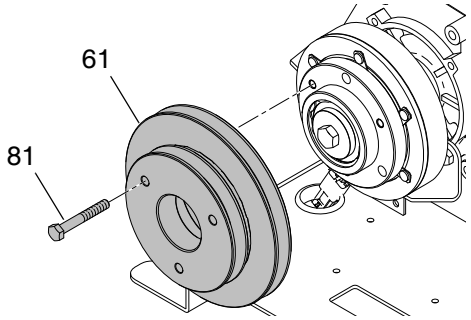
4. Unscrew tensioning bolt from the ground drive pump bracket.


ti19131a

5. Move ground drive pump assembly aside.

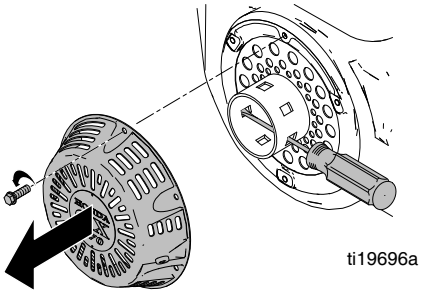

ti19213a

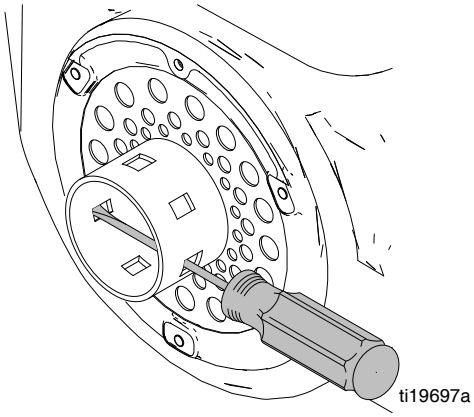
6. Remove three bolts (81) and pulley (61).



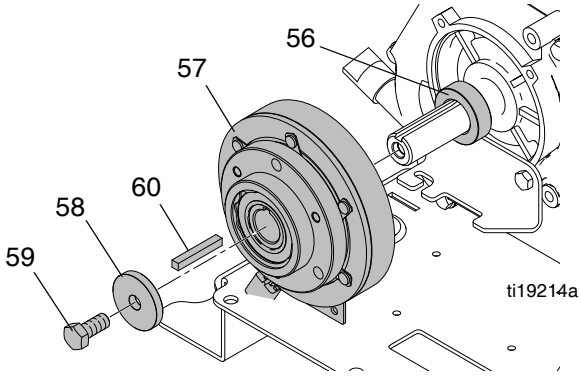
ti19216a

7. Remove engine recoil starter and place a screwdriver through the recoil starter cup.


ti19696a

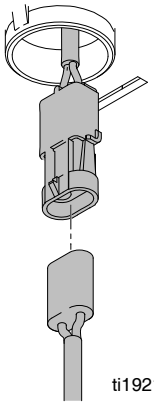

ti19697a

8. Remove center bolt (59) and remove clutch (57).



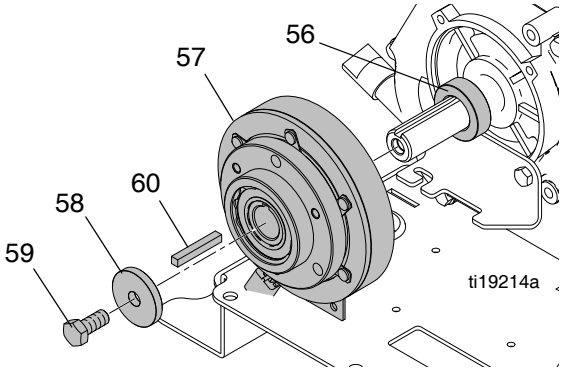
ti19214a

9. Disconnect clutch connector to main wire harness.

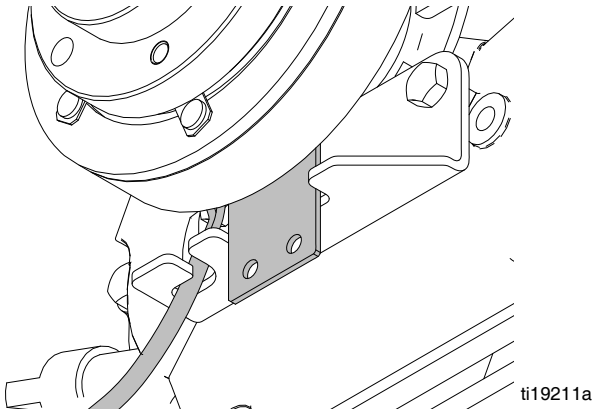

ti19212a

Installation

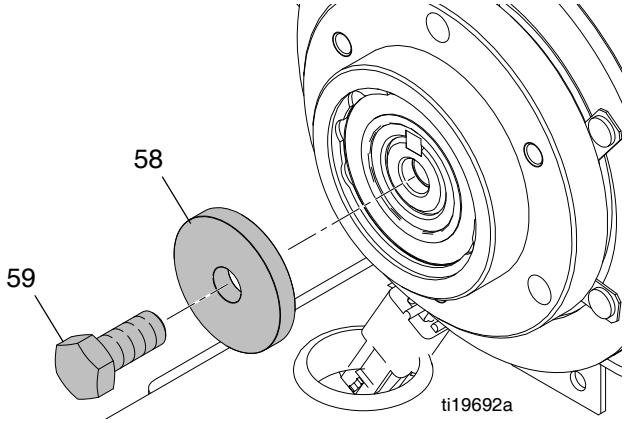
1. Install spacer (56) and key (60) onto crankshaft. Slide clutch (57) onto crankshaft.



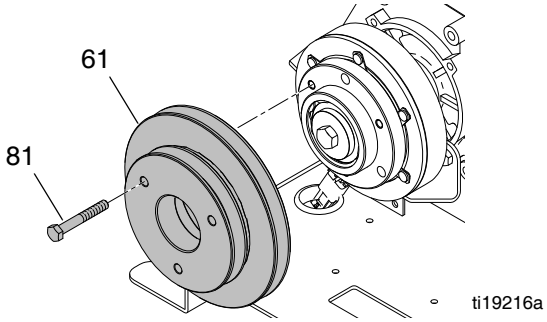
2. Align clutch and wire in bracket.



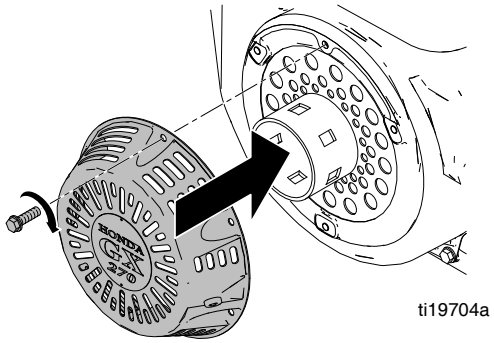
3. Install heavy washer (58) and bolt (59) onto crankshaft. Torque bolt to 45 +/- 5 ft-lb (61 +/- 7 N•m). Use screwdriver in recoil starter cup to hold crankshaft.



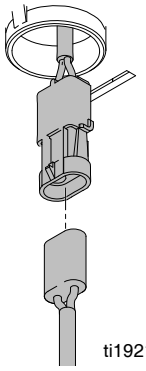
4. Install pulley (61) and torque three screws (81) to 10 ft-lb (13 N•m).



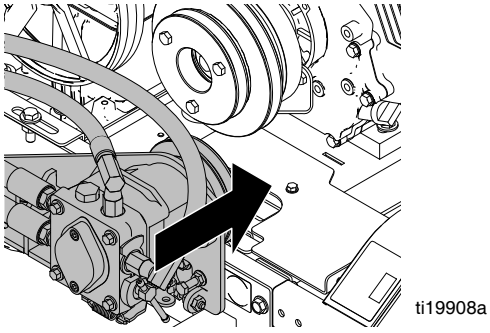
5. Install recoil starter onto engine.



6. Connect clutch to wire harness.



7. Install ground drive pump assembly with tensioning and two hold-down bolts.

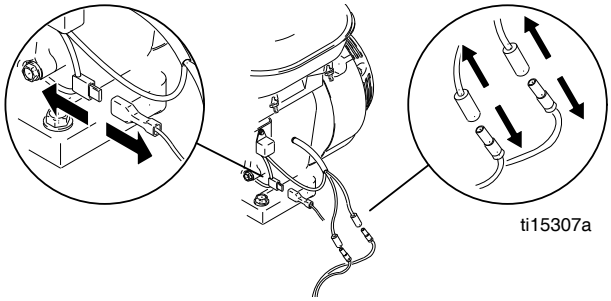


8. Install and tension **Oil Reservoir Belt** (page 11) and **Ground Drive Belt** (page 10).

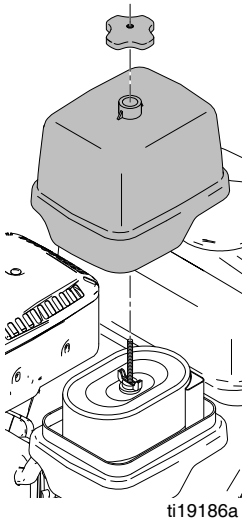
Engine Replacement

Removal

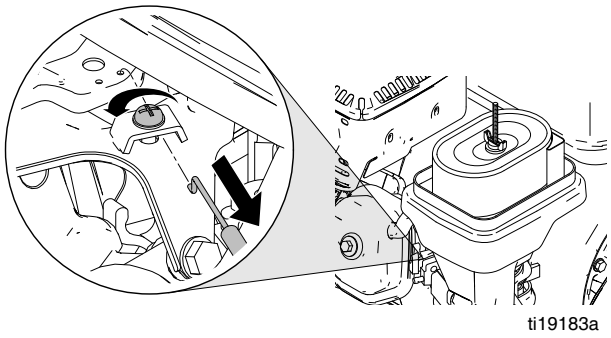
1. Remove **Clutch**, see page 20.
2. Disconnect all wires from engine.



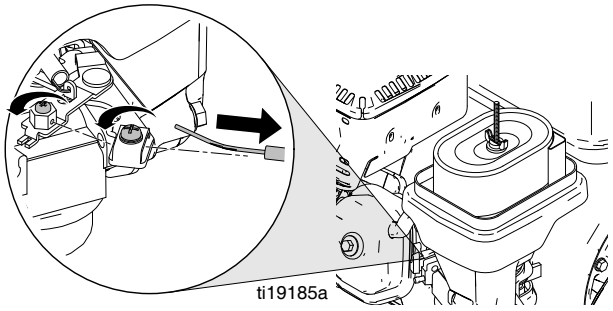
3. Remove air filter cover, element and base.



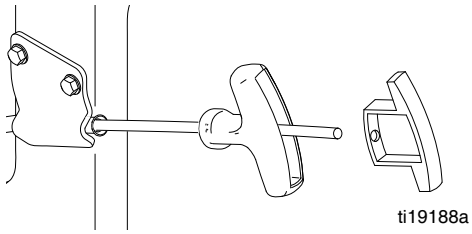
4. Disconnect throttle cable.



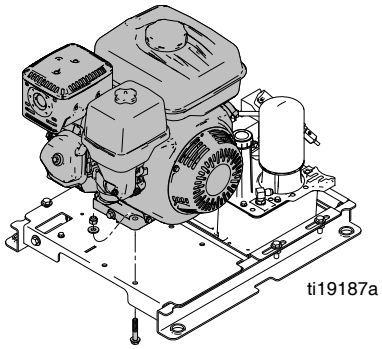
5. Disconnect choke cable.



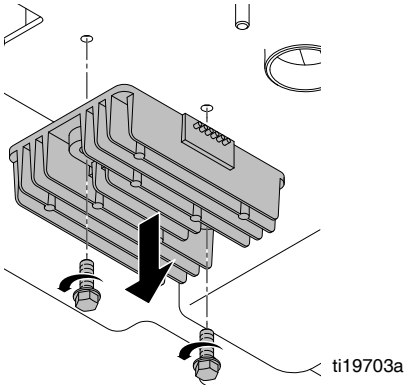
6. Tie knot in rope by recoil starter to prevent rope from being pulled into recoil starter.
7. Take rope handle apart and untie knot in recoil starter handle.



8. Pull rope through rope guide.
9. Remove four mounting bolts from engine.

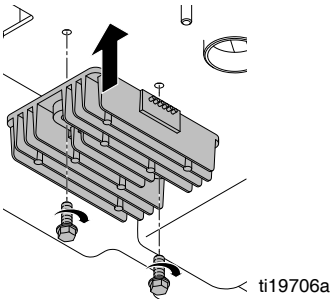


10. Remove engine. **NOTE:** Engine voltage regulator is located below engine mounting plate. Remove two screws and disconnect wires.

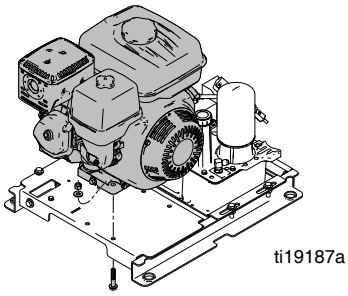


Installation

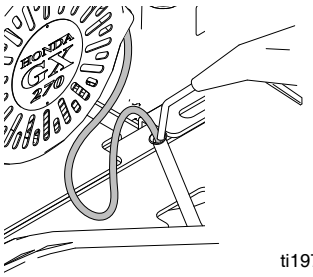
1. Install engine voltage regulator below engine mounting plate with two screws. Connect regulator to wire harness.



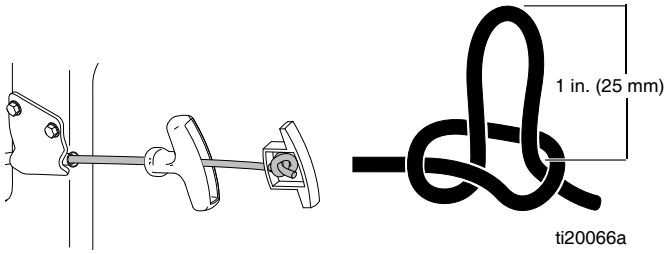
2. Install engine and tighten four mounting bolts and nuts.



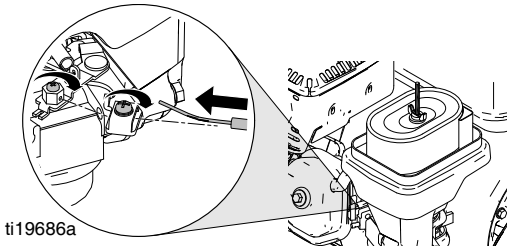
3. Use compressed air to feed recoil starter rope through rope guide.



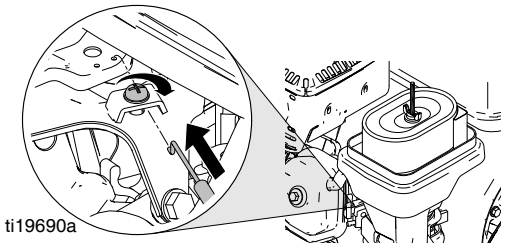
4. Feed rope through recoil starter handle and tie knot.



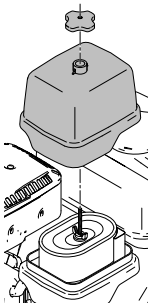
5. Install choke cable:
   a. Make sure choke knob is pressed down.
   b. Insert choke cable wire into hex-shaped pivot.
   c. Insert cable sheathing under cable clamp and tighten screw.
   d. Tighten screw on hex-shaped pivot.
   e. Verify proper operation of engine choke.



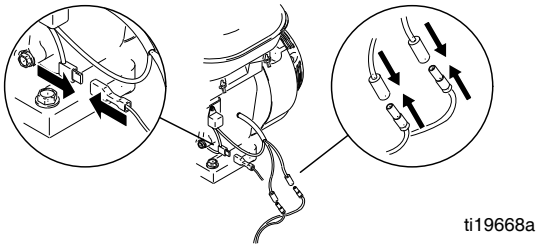
6. Install throttle cable.
   a. Place speed lever to high speed.
   b. Insert “Z” bend wire into hole furthest from pivot.
   c. Place cable sheathing under clamp and pull cable against high speed stop screw.
   d. Tighten screw on cable clamp.
   e. Verify proper operation of speed lever.



7. Install air filter base, element and cover.



8. Connect three wires to engine.

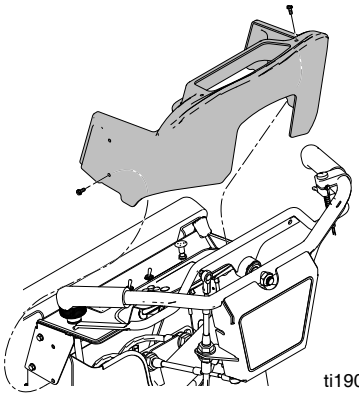


9. Install **Clutch**, see page 20.
10. Add gas and oil to engine (see Operation manual).
11. Start engine and verify high speed of 3600 rpm.

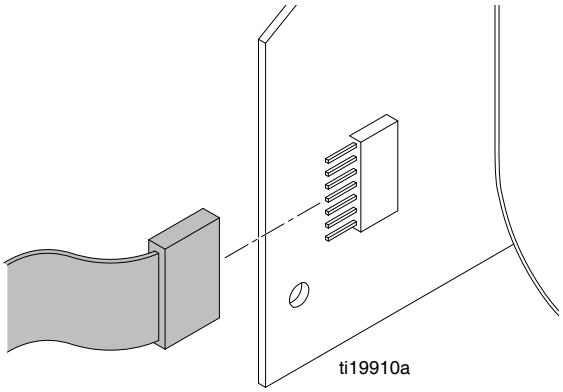
Touch-Pad Replacement

Removal

1. Remove six screws and control shroud.



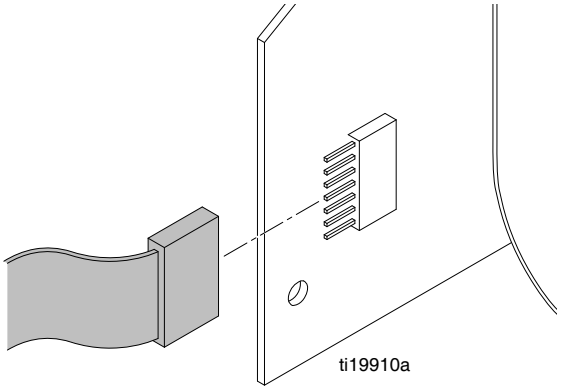
2. Disconnect ribbon cable from touch-pad at display board.



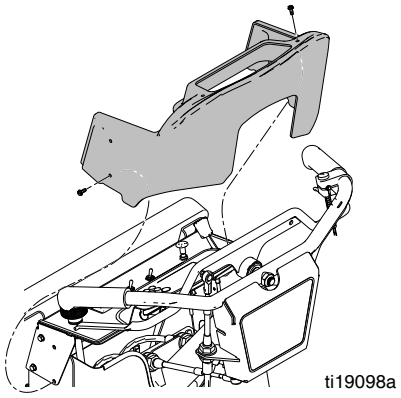
3. Peel off touch-pad and remove adhesive from sheet metal.

Installation

1. Apply touch-pad to sheet metal.
2. Connect ribbon cable from touch-pad at display board.



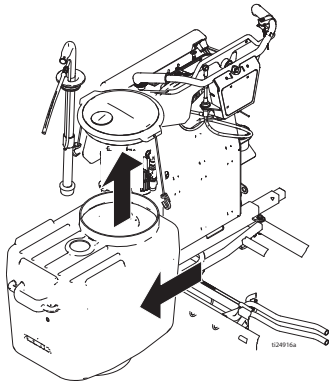
3. Install control shroud with six screws.



Control Board, Toggle Switches and Display Replacement

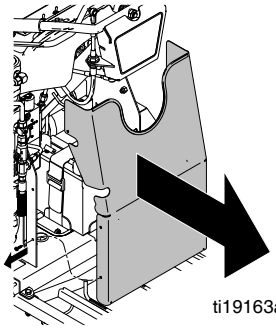
Removal

1. **Remove Fuse** to disconnect battery, page 29.
2. Remove tank lid and siphon tube.



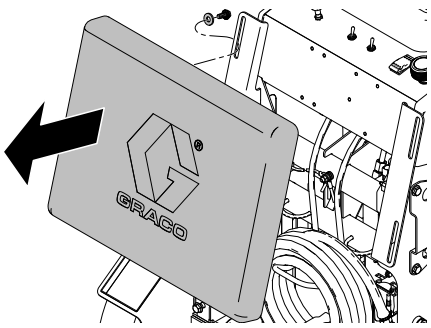
ti24916a

3. Remove tank from unit.
4. Use wrench to remove six screws from front shield.



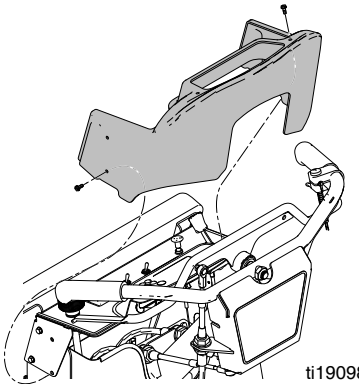
ti19163a

5. Remove front shield from unit.
6. Remove four screws and remove pad.



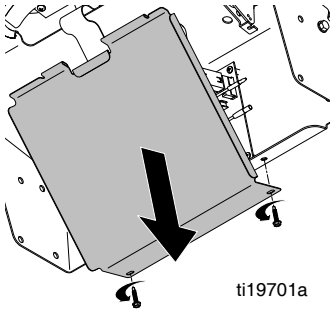
ti19164a

7. Remove six screws and control shroud.



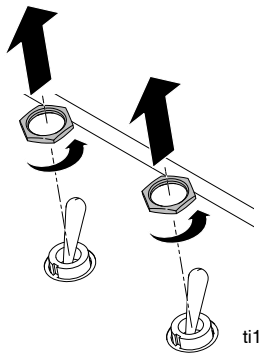
ti19098a

8. Remove two screws and splash shield.



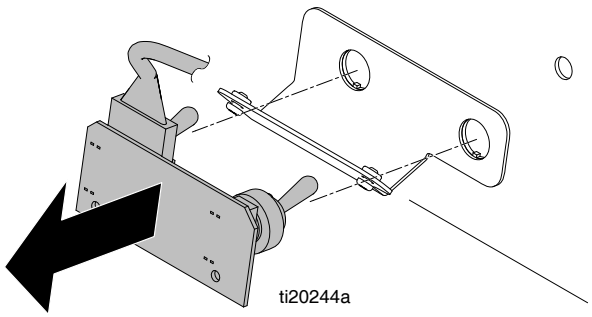
ti19701a

9. Remove two toggle switch nuts from control panel.



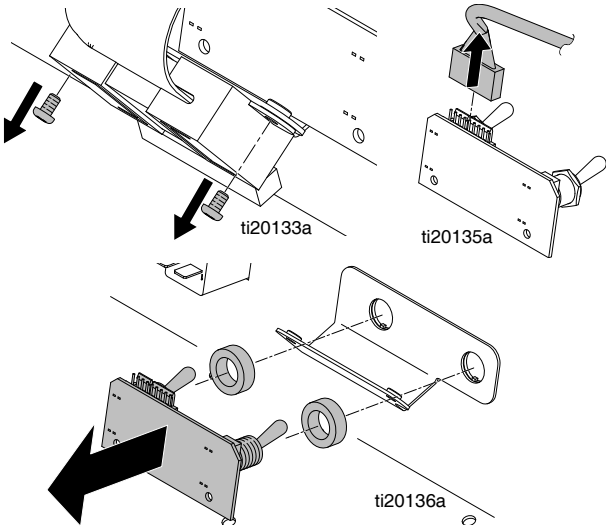
ti19702a

10. Feed toggle switches through control panel.

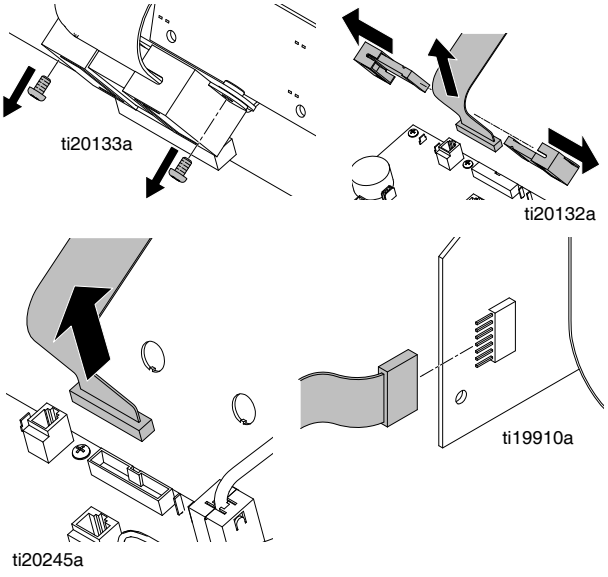


ti20244a

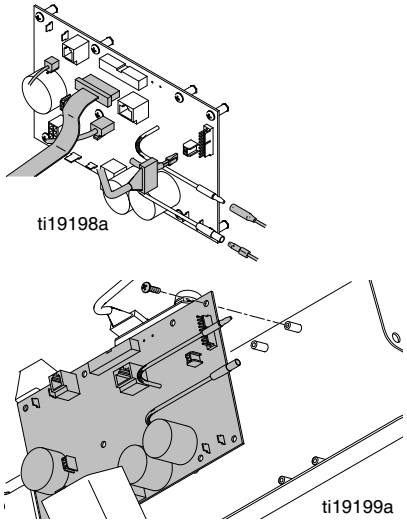
11. If replacing the toggle switches loosen two screws holding the ferrite core. Disconnect cable and remove toggle switch board.



12. If replacing the display, remove two screws holding the ferrite core to toggle switch bracket. Pull apart ferrite core to remove from ribbon cable. Disconnect display ribbon cable from control board. Disconnect touchpad ribbon cable from display board. Remove four screws holding display and remove display.

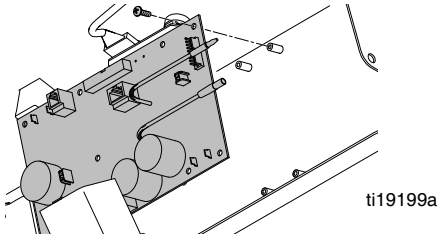


13. If replacing control board, disconnect all wires from control board. Remove eight mounting screws and remove control board.

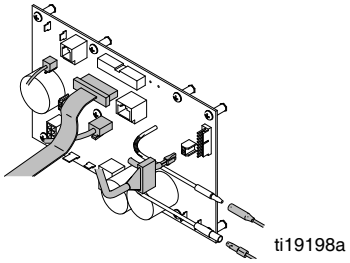


Installation

1. If replacing control board, install control board with eight mounting screws.



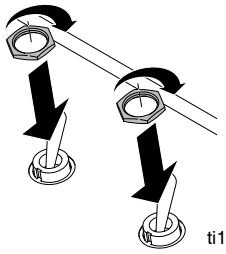
2. Connect all wires to control board. See **Wiring Diagram**, page 43.



3. If replacing display, install display with four screws. Install touchpad ribbon cable to display board. Install display ribbon cable to control board. Assemble ferrite core on ribbon cable. Install ferrite core to toggle switch bracket with two screws.

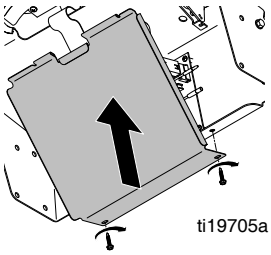
4. If replacing toggle switches, install toggle switches into toggle switch bracket. Make sure to place spacers between toggle switches and bracket. Connect cable to toggle switch board.

5. Feed toggle switches through control panel and install two toggle switch nuts.

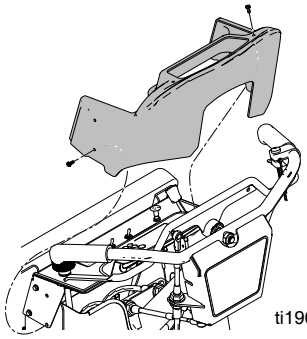

ti19691a

6. **Install Fuse**, see page 29. Check control, switches and display.

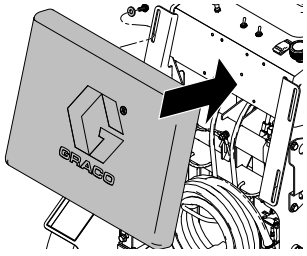
7. Install splash shield with two screws.


ti19705a

8. Install control shroud with six screws.

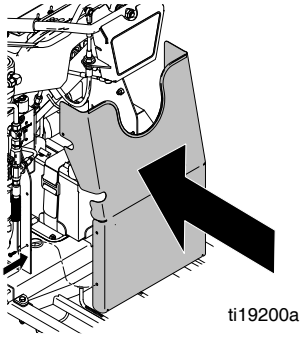

ti19098a

9. Install pad and tighten four screws.

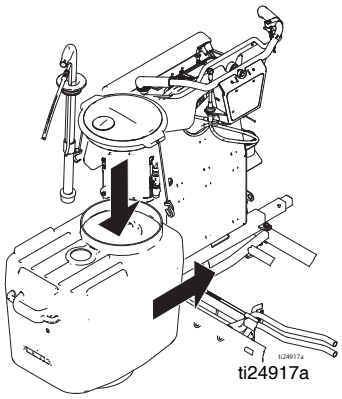


ti19171a

10. Install front shield and tighten six screws.


ti19200a

11. Install tank, lid and siphon tube.

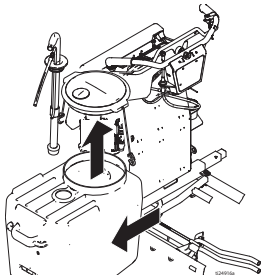

ti24917a

12. If control board was replaced, calibrate distance sensor (see Operation manual).

Battery Replacement

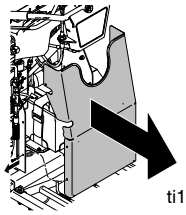
Removal

1. Remove tank lid and siphon tube.


ti24916a

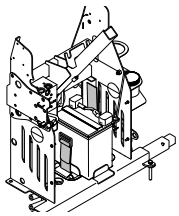
2. Remove tank from unit.

3. Use wrench to remove six screws from front shield.


ti19163a

4. Remove front shield from unit.

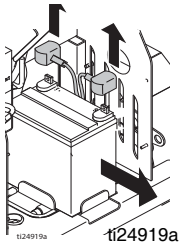
5. Remove hold down strap from battery.


ti24918a

NOTICE

To reduce the risk of shorting the battery, always disconnect NEGATIVE (black wire) first.

6. Disconnect two wires from battery.


ti24919a

7. Remove battery.

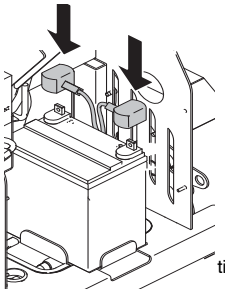
Installation

1. Install battery.

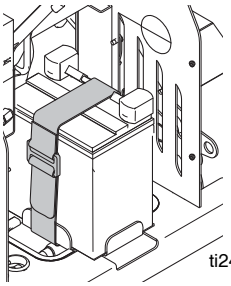
NOTICE

To reduce the risk of shorting the battery, always connect NEGATIVE (black wire) last.

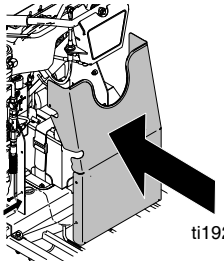
2. Connect red wire to positive (+) and black wire to negative (-) posts of the battery.


ti24920a

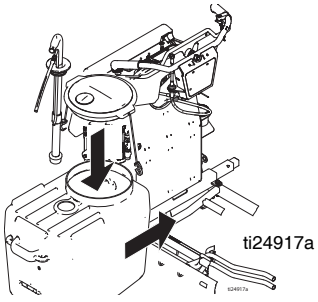
3. Install battery hold down strap.


ti24921a

4. Install front shield and use wrench to tighten six screws into shield.

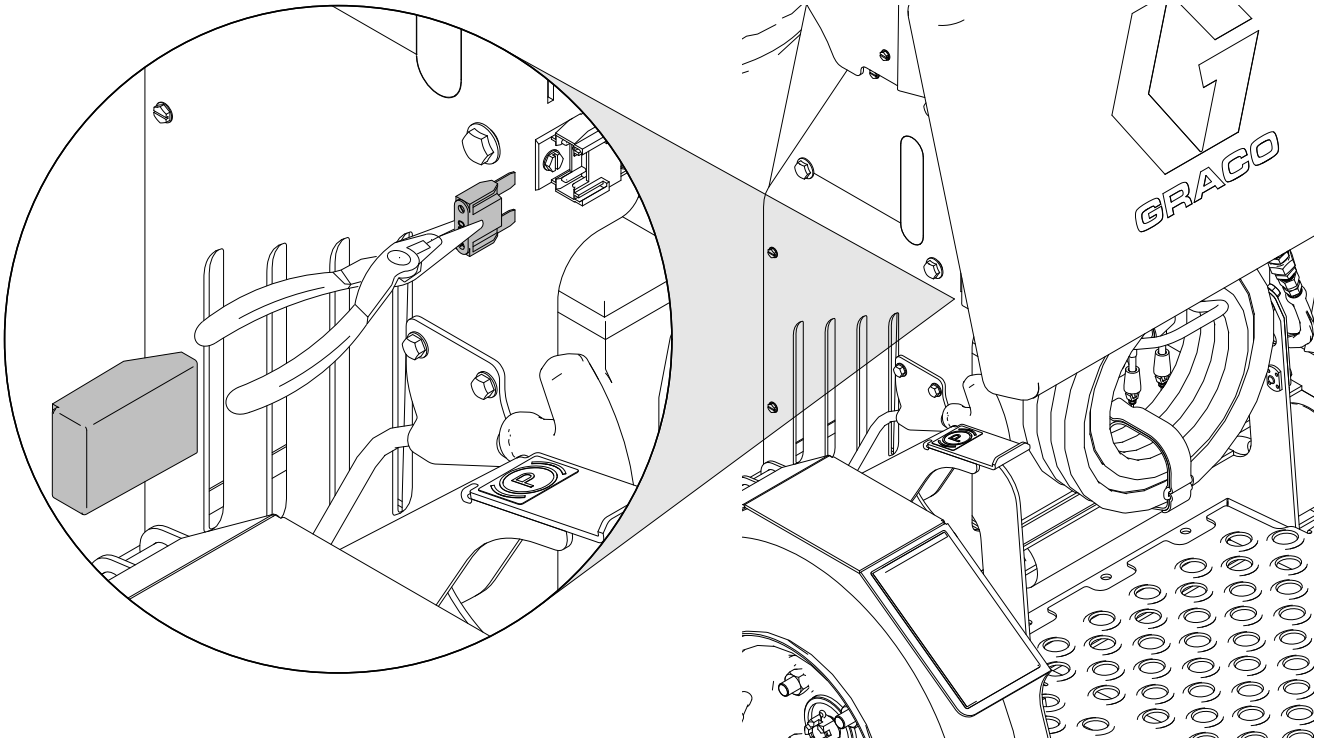

ti19200a

5. Replace tank and install lid with siphon tube.


ti24917a

Fuse Replacement

1. Remove fuse cover.
2. Use needle-nose pliers to remove old fuse and inspect it for open circuit.
3. If fuse is open, a wire has shorted to the frame or auxiliary lighting requires too much power. Check wiring or reduce auxiliary lighting before replacing fuse.
4. Use needle-nose pliers to install new fuse.
5. Replace cover.

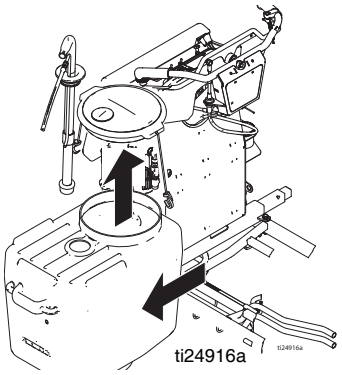


ti19209a

Forward/Reverse Cable Replacement

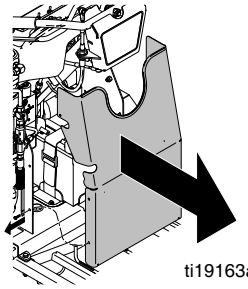
Removal

1. Remove tank lid and siphon tube.



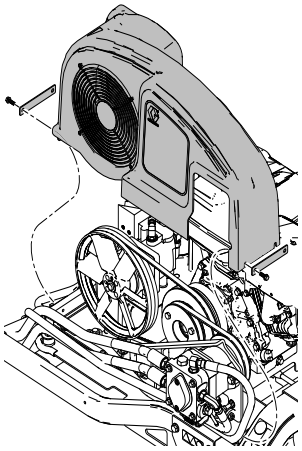
2. Remove tank from unit.

3. Use wrench to remove six screws from front shield.

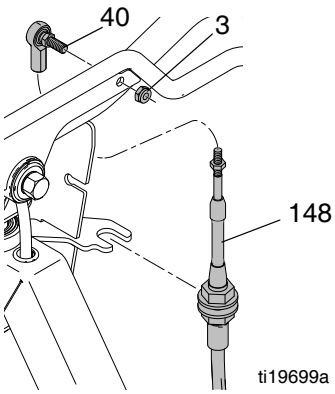


4. Remove front shield from unit.

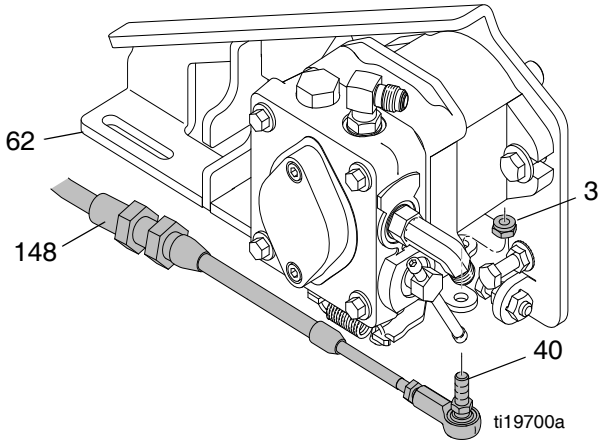
5. Loosen four screws and remove belt cover.



6. At the handlebar, remove locknut (3) and ball joint (40) from handlebar forward/reverse lever. Remove ball joint (40) from cable (148) and save if not replacing. Loosen two nuts on cable (148) and remove from bracket.



7. At the ground drive pump, remove locknut (3) and ball joint (40) from ground drive pump. Remove ball joint from cable and save if not replacing. Loosen two nuts on cable (148) and remove from bracket (62).

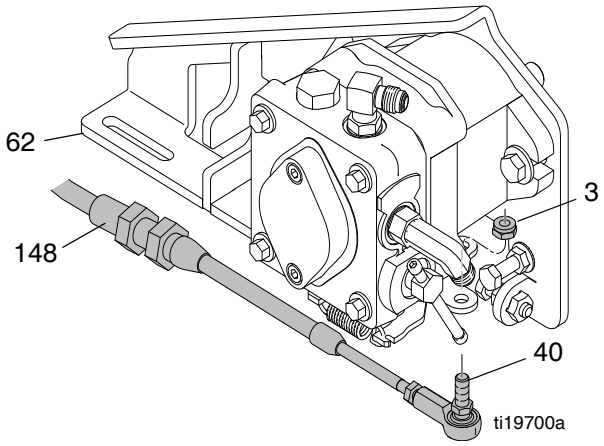


8. Install new cable (148) as old cable is removed to follow same route through frame.

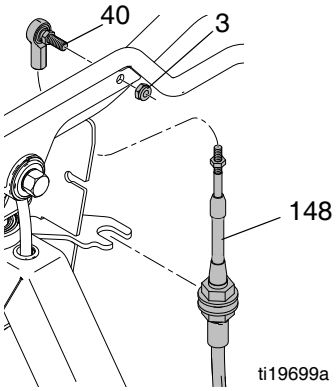
Installation

1. Install new cable (148) by following same route as old cable is being removed.

2. At ground drive pump bracket (62), install cable (148) in bracket slot and tighten two nuts. Install ball joint (40) onto cable and attach ball joint (40) to ground drive pump with locknut (3).



3. Install cable (148) into handlebar bracket and tighten two nuts. Install ball joint (40) onto cable. Install ball joint into handlebar forward/reverse lever and tighten locknut (3).



4. Verify that the handlebar forward/reverse lever does NOT touch handlebar grips. Adjust cable and ball joints if needed.

5. Install belt cover and tighten four screws.

6. Install front shield onto unit.

7. Use wrench to tighten six screws into front shield.

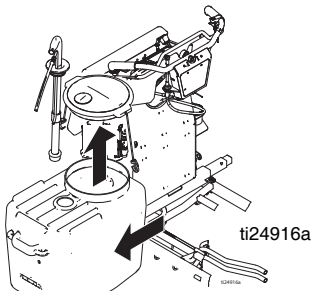
8. Install tank onto unit.

9. Install siphon tube and tank lid.

Steering Cable Replacement

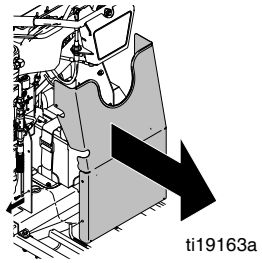
Removal

1. Remove tank lid and siphon tube.



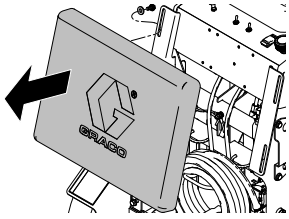
2. Remove tank from unit.

3. Use wrench to remove six screws from front shield.

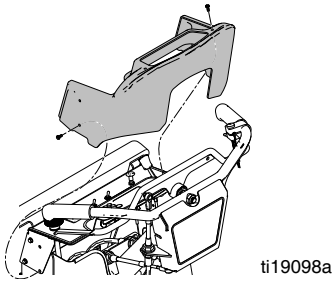


4. Remove front shield from unit.

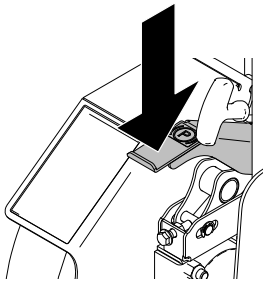
5. Loosen four screws and remove pad.



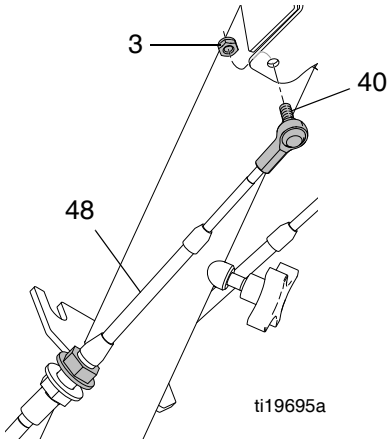
6. Remove six screws and control shroud.



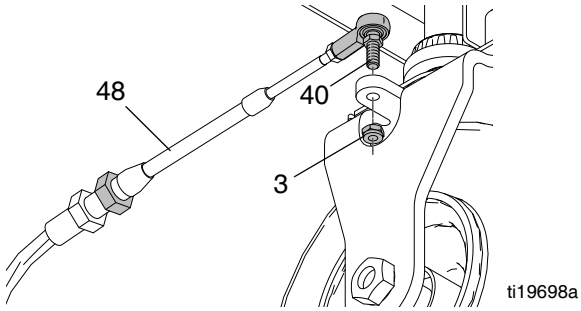
7. Apply parking brake. Raise front wheel off the ground and support frame on two jack stands.



8. At the handlebar, remove locknut (3) and ball joint (40) from handlebar. Remove ball joint (40) from cable (48) and save if not replacing. Loosen two nuts on cable (48) and remove from bracket.



9. On front wheel fork, remove locknut (3) and ball joint (40) from fork. Remove ball joint (40) from cable (48) and save if not replacing. Loosen two nuts on cable (48) and remove from bracket.

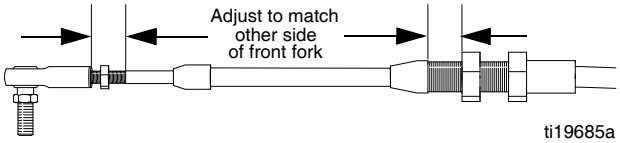


10. Note position of cable (48) and cut off all cable ties that retain cable to frame. Install new cable as old cable is removed to follow same route through frame.

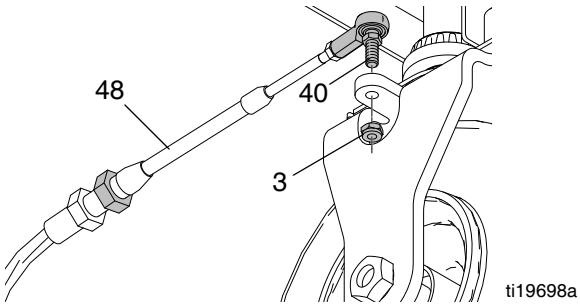
Installation

1. Install new cable (48) by following same route as old cable is being removed.

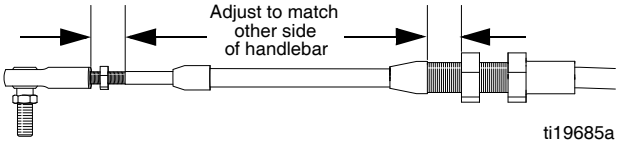
2. At front wheel, adjust front nut on cable (48) to match the threads on the other side of front fork. Install cable (48) into frame bracket and tighten rear nut.



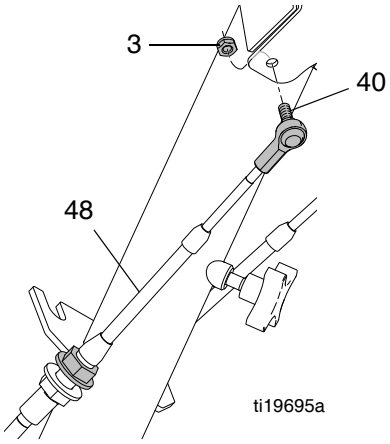
3. Install ball joint (40) onto cable (48) and match threads on other side of front fork. Install ball joint (40) into fork and tighten locknut (3).



4. At handlebar, adjust front nut on cable (48) to match threads on other side of handlebar. Install cable (48) into bracket and tighten rear nut.



5. Install ball joint (40) onto cable (48) and match threads on other side of handlebar. Install ball joint (40) into handlebar and tighten locknut (3).



6. Verify that handlebar is aligned straight with frame. If misaligned, adjust nuts on cable (48) to straighten handlebar to frame.

7. Verify that front wheel self-centers and that steering is tight and responsive. Ball joint (40) should rotate easily on the ball. If needed, remove ball joint from fork and adjust ball joint on cable (48).

8. Install pad and tighten four screws.

9. Remove jack stands and test drive sprayer to check steering. Adjust if needed. Install cable ties in locations noted in step 10 of Removal.

10. Verify straight line tracking and adjust if necessary (see Operation manual).

11. Install control shroud and tighten six screws.

12. Install front shield onto unit.

13. Use wrench to tighten six screws into front shield.

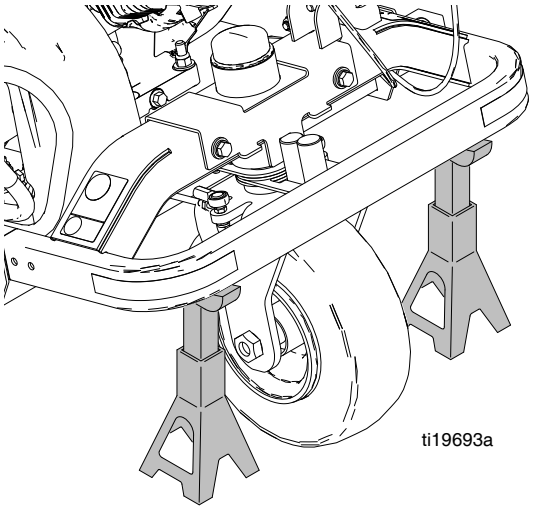
14. Install tank onto unit.

15. Install siphon tube and tank lid.

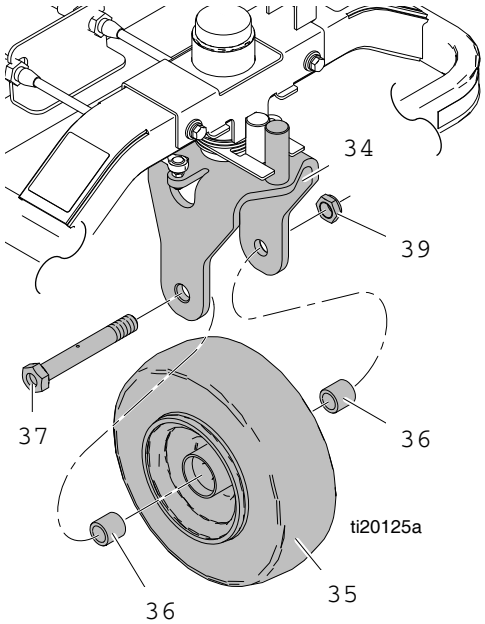
Front Wheel Replacement

Removal

1. Apply parking brake. Raise front wheel off ground and support frame on two jack stands.



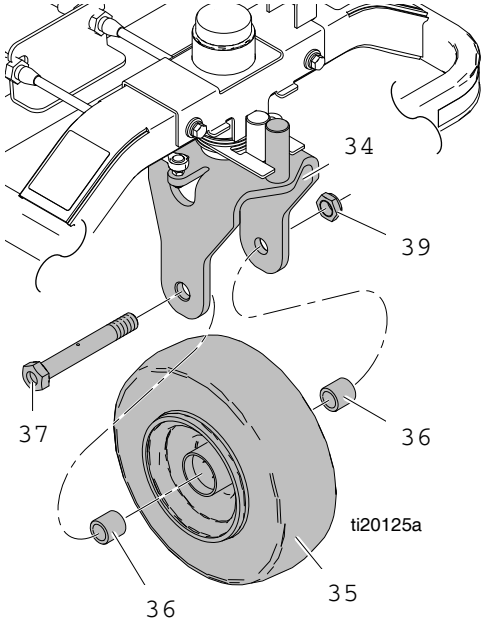
2. Remove locknut (39) from axle bolt (37) and remove axle bolt (37) from fork (34).



3. Remove two spacers (36) and wheel (35) from fork (34).

Installation

1. Insert two spacers (36) into wheel (35) and slide into fork (34).



2. Insert axle bolt (37) through fork (34), spacers (36) and wheel (35).

3. Tighten locknut (39) onto axle bolt (37).
NOTE: When properly tightened, the wheel should not wobble to the left or right and should stop coasting quickly.

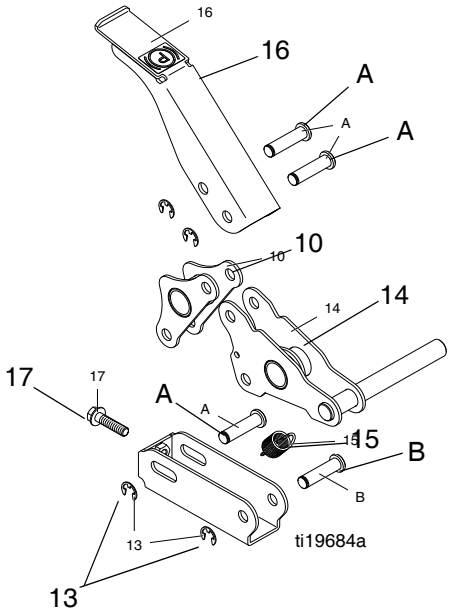
4. Verify front tire pressure is 55-80 psi (380-550 kPa).

5. Remove jack stands and test drive sprayer to verify straight line tracking. Adjust if necessary (see Operation manual).

Parking Brake Service

Removal

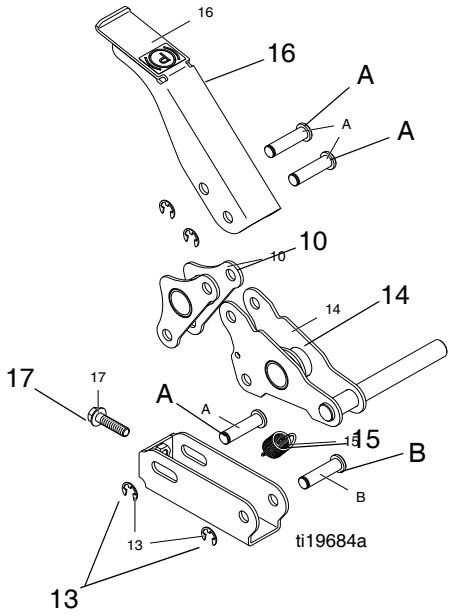
1. Remove tire, wheel hub, and fender. See **Wheel Motor Removal**, page 36.
2. Remove clips (13) from three pins (A). Remove pins and levers.



3. Use screwdriver to remove spring (15). Remove clip (13) and pin (B).
4. Replace damaged or worn parts.

Installation

1. Install lever (14) with pin (B) and clip (13).
2. Use screwdriver to install spring (15).

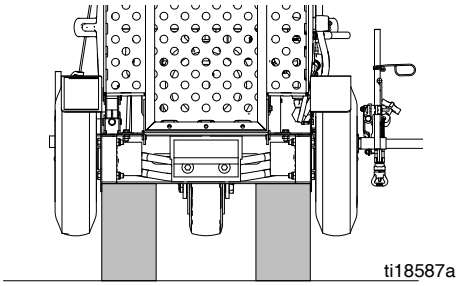


3. Install levers (10, 16) with three pins (A) and clips (13).
4. Install fender, wheel hub, and tire. See **Wheel Motor Installation**, page 37.
5. Adjust screw (17) to hold tire when brake lever (16) is depressed.

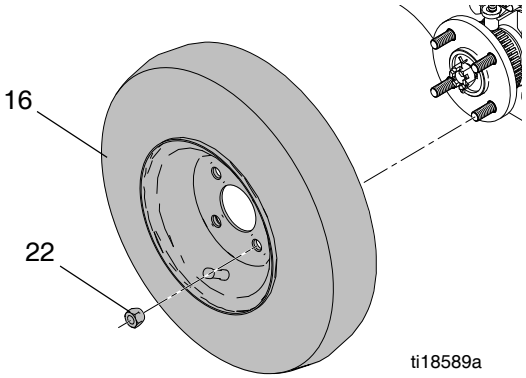
Rear Wheel and Wheel Motors

Rear Wheel Removal

1. Set LineStriper on blocks so wheels are off ground.

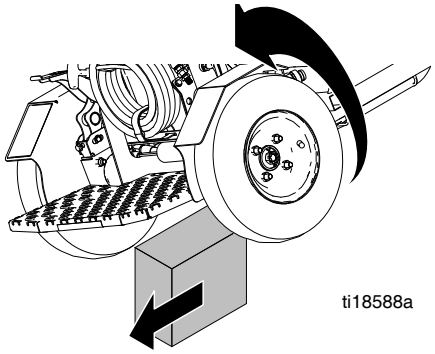


2. Remove four lug nuts (22) and wheel (16).



Rear Wheel Installation

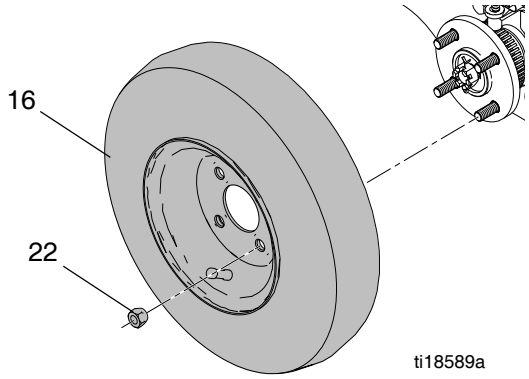
1. Replace wheel and install lug nuts. Alternately tighten lug nuts opposite of each other.
2. Tilt LineStriper on side and remove blocks.



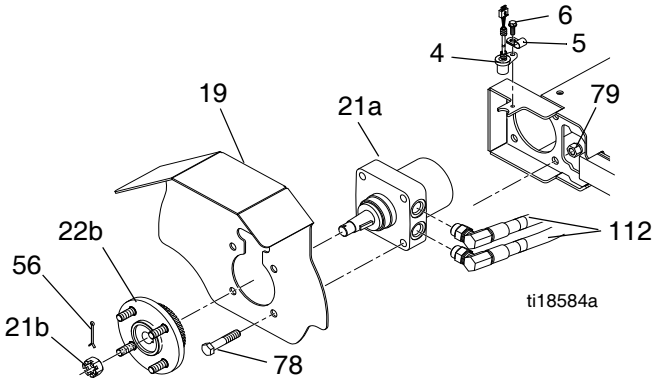
3. Inflate rear tires to 55 +/- 5 psi (380 +/- 34 kPa).

Wheel Motor Removal

1. Place jack under frame near wheel and raise jack.
2. Remove four lug nuts (22) and wheel (16).



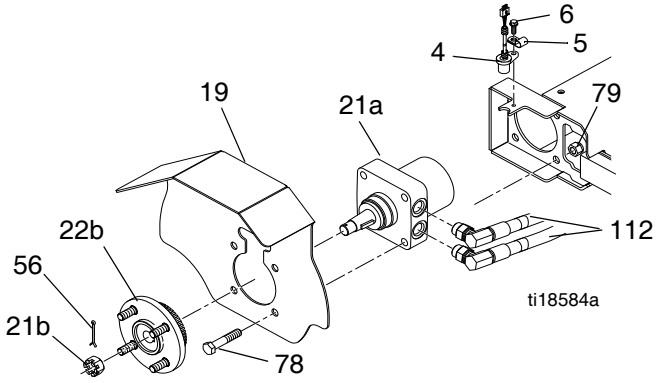
3. Remove pin (56), castle nut (21b) and wheel hub (22b). Wheel hub may require a wheel puller; not supplied by Graco.



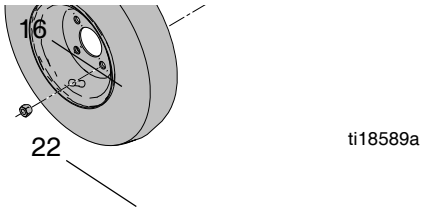
4. Remove four bolts (78), lock nuts (79) and fender (19).
5. Remove screw (6) and distance sensor (4) with clamp (5).
6. Disconnect two hydraulic hoses (112) from wheel motor (21a) and remove wheel motor.

Wheel Motor Installation

1. Connect two hydraulic hoses (112) to wheel motor (21a) and insert wheel motor (21a) into frame (1).
2. Install distance sensor (4) and clamp (5) with screw (6).



3. Install wheel motor (21a) and fender (19) with four bolts (78) and lock nuts (79).
4. Install wheel hub (22b), castle nut (21b), and pin (56).
5. Install wheel (16) and four lug nuts (22). Alternately tighten lug nuts opposite each other.

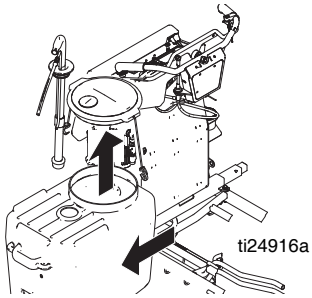


6. Purge hydraulic system. See **Hydraulic System Purging**, page 12.

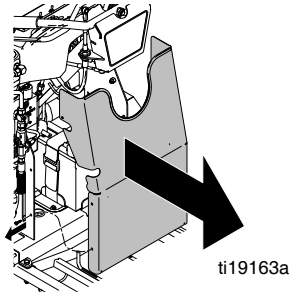
Wheel Sensor Replacement

Removal

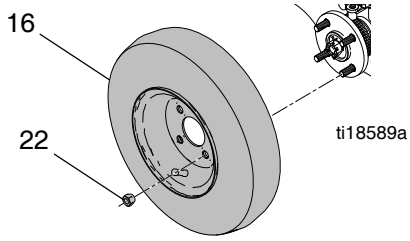
1. Remove tank lid and siphon tube.



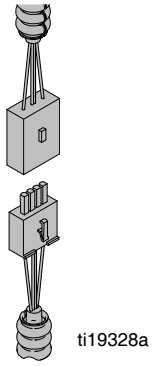
2. Remove tank from unit.
3. Use wrench to remove six screws from front shield and remove front shield from unit.



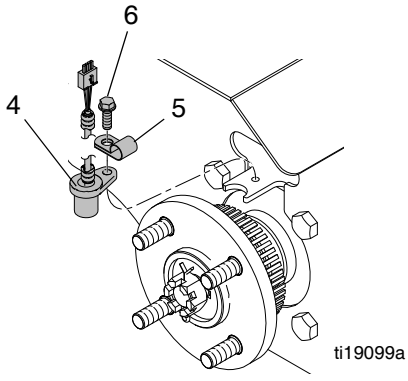
4. Place jack under frame near pump-side wheel and raise jack.
5. Remove four lug nuts (22) and wheel (16).



6. Disconnect wheel sensor connector from wire harness.

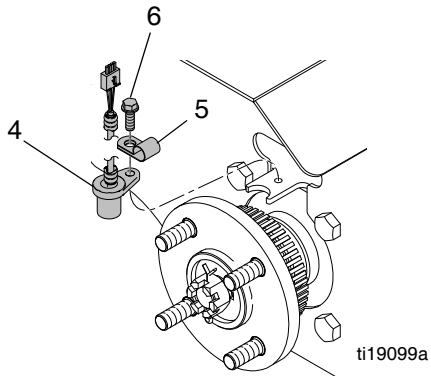


7. Use wrench to remove screw (6), clamp (5), and wheel sensor (4).

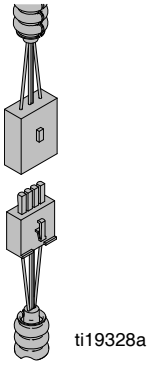


Installation

1. Install wheel sensor (4) and clamp (5) with screw (6).

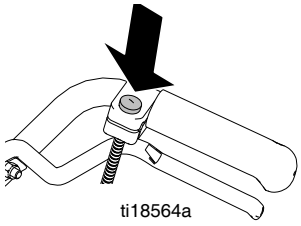


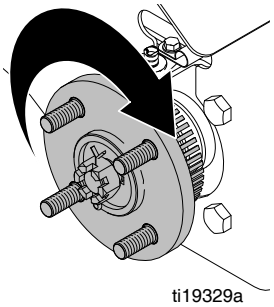
2. Connect wheel sensor connector to wire harness.



3. Verify sensor is working by turning on the main power switch and press **SETUP** to display the **MEASURE** screen.

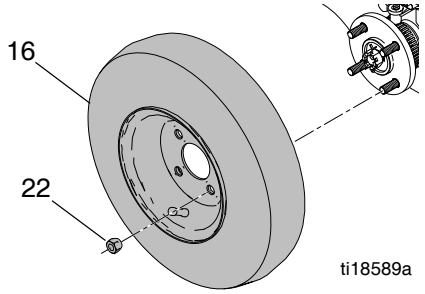
4. Press gun trigger control button and rotate hub by hand exactly three turns.





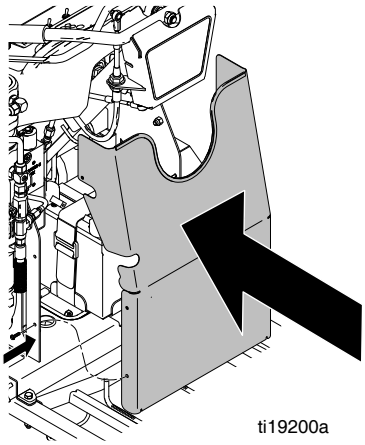
NOTE: Sensor is working properly if the measure display reads 12.3 to 12.7 ft (3.75 to 3.87 m).

5. Install wheel (16) and four lug nuts (22).

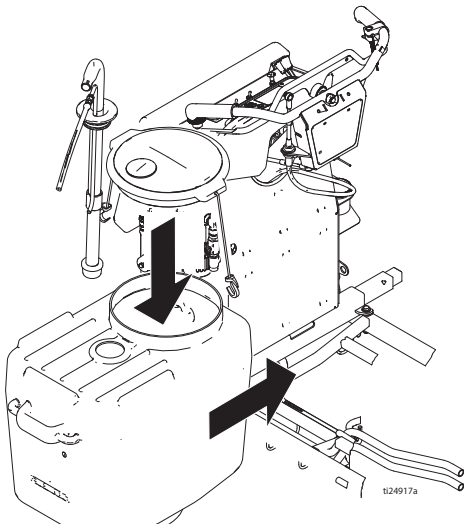


6. Lower jack.

7. Install front shield with six screws.



8. Install tank and siphon tube.



9. Calibrate sprayer. See operation manual.

Troubleshooting

General

Problem	Cause	Solution
Engine pulls hard	Excessive hydraulic load. Main power switch is on.	Turn main power switch OFF.
Engine will not start	Engine is out of gas.	Refill gas tank. See engine manual.
	Fuel shut-off lever is OFF.	Move fuel shut-off lever to ON position.
	Engine switch is OFF.	Turn engine switch ON.
	Engine oil level is low.	Check oil level and add oil if necessary. See engine manual.
	Engine is cold.	Use engine choke.
	Spark plug cable is disconnected or damaged.	Connect spark plug cable or replace spark plug cable.
	Main power switch is stuck in engine stop position.	Replace main power switch.
	Oil is seeping into combustion chamber.	Remove spark plug. Pull starter 2 to 4 times. Clean or replace spark plug. Start engine. Keep sprayer upright to avoid oil seepage.
High engine speed at no load	Improperly adjusted high speed setting.	Reset high speed to 3600 - 3700 engine rpm at no load.
	Worn engine governor.	Adjust or replace engine governor.
Machine will not drive	Main power switch is not turned ON.	Turn main power switch ON.
	Hydrostatic drive is not engaged.	Close wheel motor bypass valve to engage drive.
	Drive cable is disconnected or broken.	Reconnect or replace cable.
	Clutch wire harness is disconnected or broken.	Reconnect or replace harness as necessary.
	Clutch does not work.	Replace clutch.
	Ground drive belt is worn or broken.	Adjust or replace ground drive belt.
	Ground Drive Pump is worn or not working.	Replace ground drive pump.
	Wheel motor(s) worn or not working.	Replace wheel motor.
Engine operates, but displacement pump does not operate	Main power switch is OFF.	Turn main power switch ON.
	Pump valve is OFF.	Turn pump valve ON.
	Pressure setting is too low.	Turn pressure adjusting knob clockwise to increase pressure. See operation manual.
	Prime/drain valve is closed and system is pressurized.	Open prime/drain valve.
	Hydraulic fluid too low.	Shut off sprayer. Add fluid*.
	Oil reservoir belt is worn, broken, or off the pulley.	Replace oil reservoir belt. See page 11.
	Tip is clogged.	Reverse tip to clean. See manual 311254.
	Displacement pump piston rod is stuck due to dried paint.	Repair pump. See manual 309277.
	Hydraulic motor not shifting.	Set pump valve OFF. Turn pressure down. Turn engine OFF. Pry rod up or down until hydraulic motor shifts.

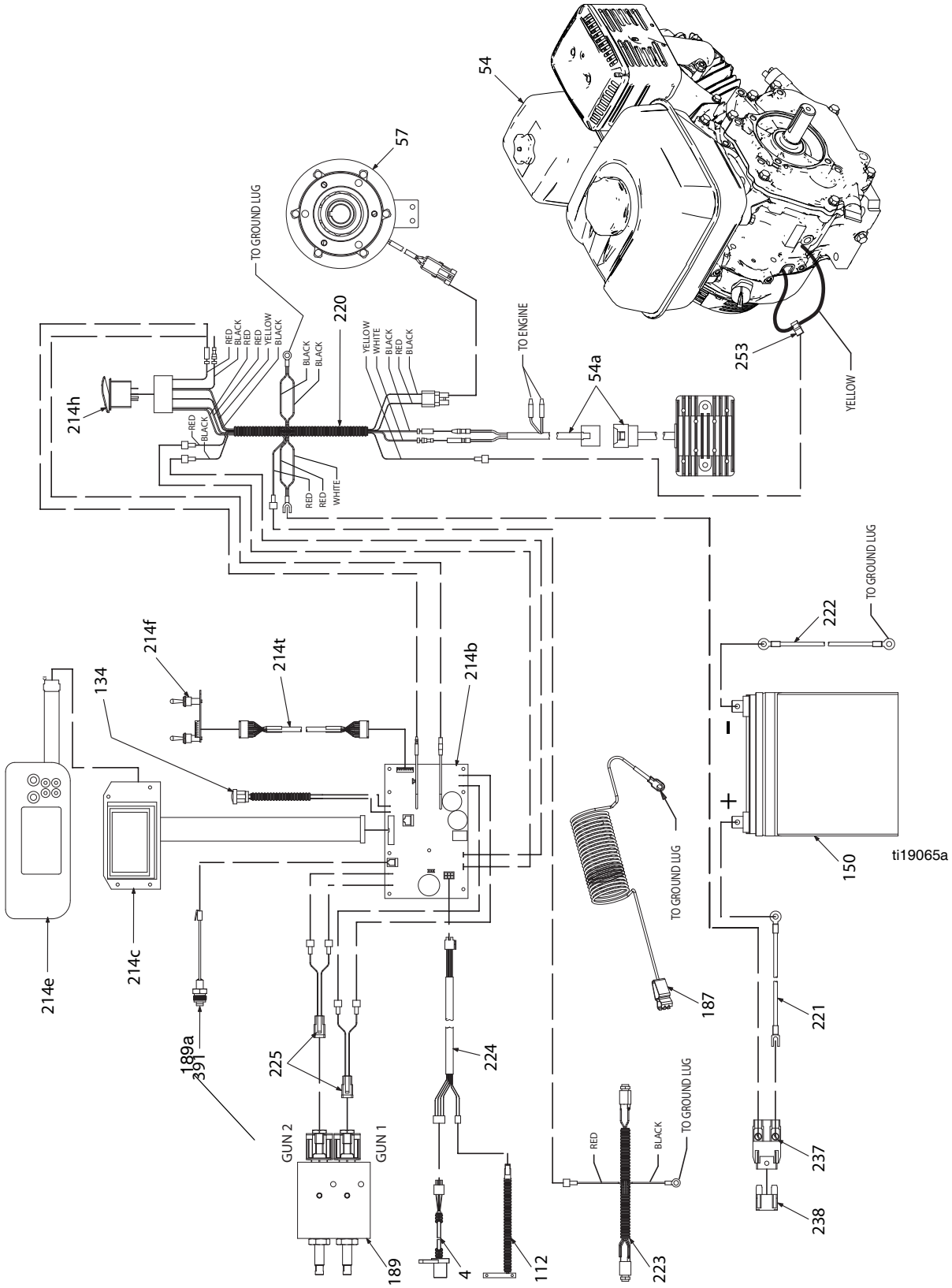
Problem	Cause	Solution
Displacement pump operates, but output is low on upstroke	Piston ball is not seating.	Service piston ball. See manual 309277.
	Piston packings are worn or damaged.	Replace packings. See manual 309277.
Displacement pump operates but output is low on downstroke and/or on both sides	Suction tube strainer is clogged.	Clean strainer.
	Suction tube air leak.	Tighten suction tube.
	Pressure setting is too low.	Increase pressure. See operation manual.
	Fluid filter or tip is clogged or dirty.	Clean filter and tip. See operation manual or gun manual 311254.
	Engine speed is too low.	Increase throttle setting. See operation manual.
	Intake valve ball is packed with material or is not seating properly.	Clean intake valve. See manual 309277.
	Pump packings are worn or damaged.	Replace pump packings. See manual 309277.
	Large pressure drop in hose with heavy materials.	Use larger diameter hose and/or reduce overall length of hose. Use of more than 100 ft x 1/4 in. hose significantly reduces performance of sprayer. Use 3/8 in. hose for optimum performance.
	Oil reservoir hydraulic filter is dirty or clogged.	Change hydraulic filter and hydraulic oil.
	Intake line to pump inlet is not tight.	Tighten intake line to pump inlet.
	Hydraulic motor is worn or damaged.	Bring sprayer to Graco distributor for repair.
Pump is difficult to prime	Suction tube strainer is clogged.	Clean strainer
	Suction tube air leak.	Tighten suction tube
	Drain line to paint hopper is clogged.	Clean drain line
	Intake valve is leaking.	Clean intake valve. Be sure ball seat is not nicked or worn and that ball seats well. Reassemble valve.
	Pump packings are worn.	Replace pump packings. See manual 309277.
	Paint is too thick.	Thin the paint according to supplier recommendations.
	Engine speed is too high.	Decrease throttle setting before priming pump. See operation manual.
Low stall or run pressure shown on display	New pump or new packings	Pump break-in period takes up to 100 gallons of material.
	Faulty transducer	Replace transducer.
Excessive paint leakage into throat packing nut	Throat packing nut is loose.	Remove throat packing nut spacer. Tighten throat packing nut just enough to stop leakage.
	Throat packings are worn or damaged.	Replace packings. See manual 309277.
	Displacement rod is worn or damaged.	Replace rod. See manual 309277.
Fluid is spitting from gun	Air in pump or hose	Check and tighten all fluid connections. Reprime pump. See operation manual.
	Tip is partially clogged.	Clear tip. See manual 311254.
	Fluid supply is low or empty.	Refill fluid supply. Prime pump. See operation manual. Check fluid supply often to prevent running pump dry.

Problem	Cause	Solution
Excessive leakage around hydraulic motor piston rod wiper	Piston rod seal worn or damaged.	Replace hydraulic motor piston rod wiper and seal.
Sprayer overheats	Paint buildup on hydraulic components	Clean hydraulic components.
	Hydraulic oil level is low	Fill with hydraulic oil. See operation manual.
Excessive hydraulic pump noise	Low hydraulic fluid level	Shut off sprayer. Add fluid*.
	Pulleys loose on hydraulic pumps	Remove belt guard. Check and tighten loose pulley.
Display does not turn on	Main power switch is not turned on	Turn main power switch on.
	Main fuse is blown	Replace fuse. See **Fuse Replacement**, page 29.
	Cable between display and board disconnected or damaged	Reconnect or replace touch pad.
	Display board failure	Replace display board.
Gallon (liter) counter not adding fluid volume	Fluid pressure not high enough	Must be over 800 psi (55 bar) for counter to add.
	Broken or disconnected wire	Check wires and connections. Replace any broken wires.
	Missing or damaged magnet	Reposition or replace magnet.
	Bad sensor	Replace sensor. See **Hydraulic Motor Replacement**, page 19.
Distance not adding properly (MEASURE mode will be inaccurate and speed will be wrong)	Machine not calibrated	Perform calibration procedure. See Operation manual.
	Rear tire pressure is too low or too high	Adjust tire pressure to 55 +/- 5 psi (380 +/- 34 kPa).
	Gear teeth missing or damaged (pump side only)	Replace distance gear/wheel hub.
	Distance sensor is loose or broken	Reconnect or replace sensor.
Mils not calculating	Distance sensor	See “Distance not adding properly”.
	Gallon counter	See “Gallon (liter) counter not adding fluid volume”.
	Bad or damaged control board	Replace control board.
Pressure control knob does not rotate	Knob is jammed	Pull back cover where remote cable connects to hydraulic pump and turn counter-clockwise (ccw) until free.
Pressure control knob rotates freely with no pressure change	Set screw at hydraulic pump connection is loose	Remove cover and tighten set screw. Reassemble cover.
	Remote cable is broken or disconnected	Replace or reconnect cable.
Gun does not trigger	Main power switch is not turned ON	Turn main power switch ON.
	Gun selector switch is OFF	Turn gun selector switch ON.
	Display is in AUTO MODE and speed is less than 0.7 mph (1.1 kph)	Increase ground speed to be greater than 0.7 mph (1.1 kph).
	System pressure is too low	Increase fluid pressure up to at least 1000 psi.
	Gun cable is disconnected or broken	Reconnect or replace cable.
	Gun trigger control switch is disconnected or broken	Reconnect or replace gun trigger control switch.
	Disconnected or broken wires from control board to solenoid	Reconnect or replace wires.
Gun triggering is slow	Gun cable is pinched or kinked	Change gun cable routing or replace cable.
	System pressure is too low	Increase fluid pressure up to at least 1000 psi.

Problem	Cause	Solution
AUTO Mode		
Line spacing is not accurate	Wrong line pattern loaded	Reload the correct pattern.
	Machine not calibrated	Perform calibration routine (see Operation manual).
Gun does not trigger	See **Gun Does Not Trigger**, page 41.	
PARKING LAYOUT Mode		
Gun does not apply dots	Gun selector switch is OFF	Turn gun selector switch ON.
	Dot size setting is too small	Increase dot size.
	Pressure is too low	Increase pressure to 1000 psi.

* Use only Graco approved hydraulic fluid 169236 (5 gallons / 18.9 liter) or 207428 (1 gallon / 3.8 liter)

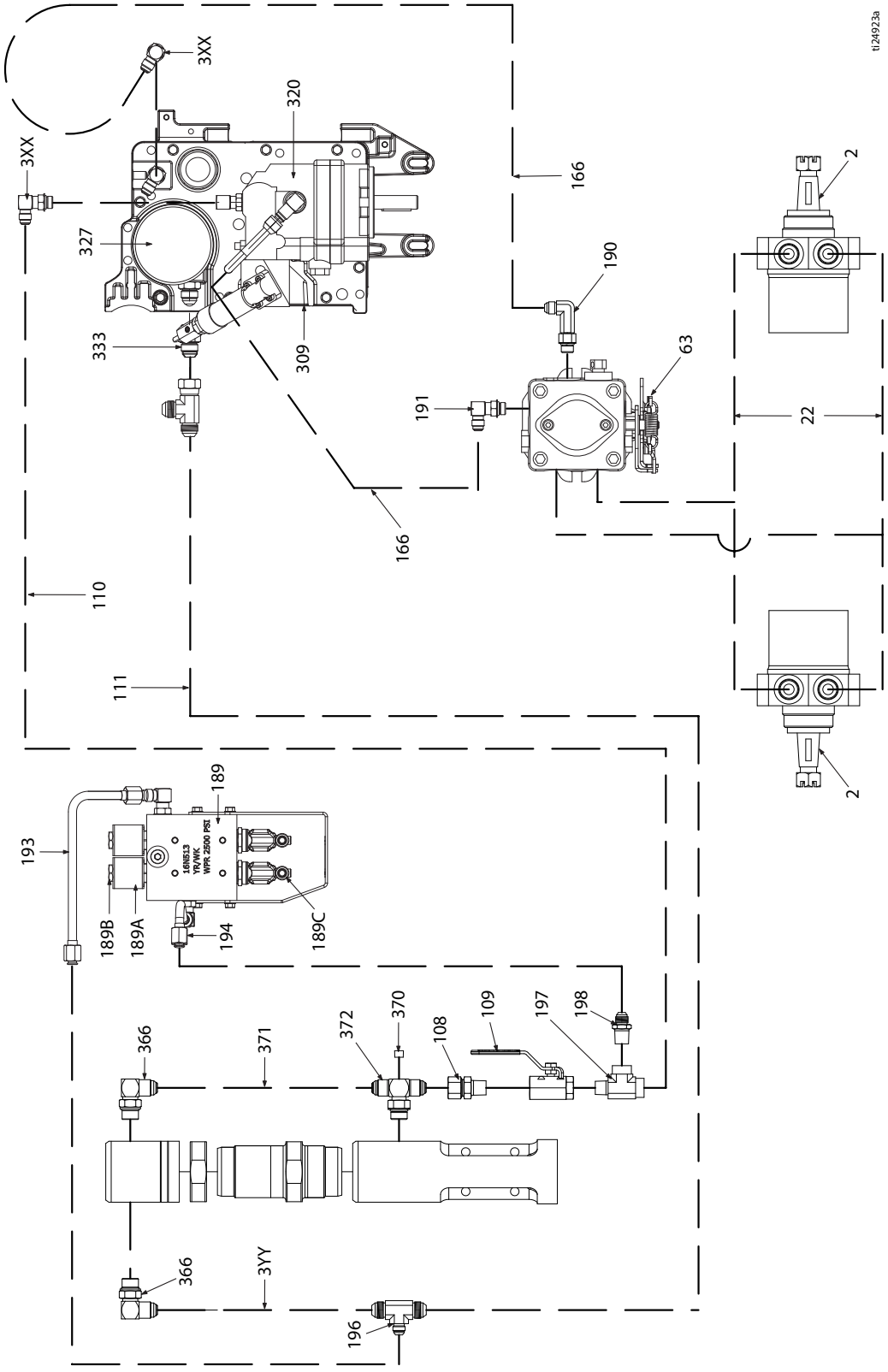
Wiring Diagram



Wiring Parts List

Ref.	Part	Description	Qty.
4	15K357	SENSOR, distance	1
54	24N501	KIT, repair, engine, GX270 (includes 54a)	1
54a	24N502	VOTLAGE REGULATOR	1
57	125877	CLUTCH, electric, LL250	1
112	119720	SWITCH, reed w/connector	1
134	24L904	CONTROL, handlebar	1
150	115753	BATTERY, 33 AH, sealed	1
187	237686	WIRE, ground assembly w/ clamp	1
189	16N513	MANIFOLD, hydraulic, two piston	1
189a	24N577	COIL, solenoid, hydraulic, manifold (included in 189)	2
214b	24N565	KIT, repair, control board	1
214c	24N564	KIT, repair, display board	1
214e	16N374	SWITCH, membrane	1
214f	24N566	KIT, repair, switch board	1
214h	126078	SWITCH, rocker, dpdt	1
214t	16P019	HARNESS, switch board	1
220	16N407	HARNESS, wire, LL250	1
221	16N542	WIRE, positive battery	1
222	16N541	WIRE, negative battery	1
223	16N540	HARNESS, light connection	1
224	16N539	HARNESS, sensor adapter	1
225	16N543	HARNESS, wire, hydraulic actuator	2
237	126095	HOLDER, fuse	1
238	126096	FUSE, 30A	1
253	114956	TERMINAL, wire tap, insulated	1
391	24N516	KIT, repair, transducer	1

Hydraulic Diagram



Hydraulic Parts List

Ref.	Part	Description	Qty.
2	125929	MOTOR, wheel	2
22	16M271	HOSE, coupled, assembly, LL250	2
63	247930	KIT, repair, hydraulic pump	1
108	117328	FITTING, nipple, straight	1
109	117441	VALVE, ball	1
110	287175	KIT, repair, hose, hydraulic s	1
111	287176	KIT, repair, hose, hydraulic r	1
166	16M276	HOSE, coupled, feed line, LL250	2
189	16N513	MANIFOLD, hydraulic, two piston (includes two 189b and two 189c)	1
189a	24N577	COIL, solenoid, hydraulic, manifold	1
189b	24N490	KIT, repair, solenoid (includes 189a)	1
189c	24N491	KIT, repair, actuator piston	1
190	124941	FITTING, long elbow, hydraulic	1
191	116829	FITTING, 90 degree, w/adjustable	1
193	24M625	TUBE, supply, hydraulic	1
194	24M626	TUBE, supply, hydraulic	1
196	126082	FITTING, tee, #8 x #8 x #6 JIC	1
197	126080	FITTING, tee, street	1
198	126081	FITTING, nipple, 3/8-18 x #6 JIC	1
309	16M160	COVER, reservoir, LL250, painted	1
320	287179	KIT, repair, pump, 200HS	1
327	246173	KIT, repair, oil filter	1
333	122970	FITTING, hydraulic	1
350	116829	FITTING, 90 degree, w/adjustable o-ring	2
351	16P776	TUBE, supply, hydraulic	1
366	117607	FITTING, elbow std thd	2
370	100139	PLUG, pipe	1
371	15F519	TUBE, hydraulic, supply	1
372	119841	FITTING, tee, branch	1

Notes

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